

October 12, 1998

IT-MC-CK05-0052  
Project No. 774645

Mr. Ellis Pope  
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Mobile District  
Attn: EN-GH-P  
109 Joseph Street  
Mobile, Alabama 36628-0001

Contract: Contract No. DACA21-96-0018/CK005  
Ft. McClellan, Alabama

Subject: Final Site-Specific Work Plans for Ft. McClellan

Dear Mr. Pope:

I am enclosing three copies of the final work plans for package 4 for your records. These plans incorporate the review comments we discussed and resolved during our September 16-17 meeting at Ft. McClellan. This package describes the activities we will conduct at the former Decontamination Complex Bldg. 1271 (EBS Parcel 93), and its associated UST (EBS Parcel 46), the former Gas Station Bldg. 1294 (EBS Parcel 140), the Washrack Bldg. 1298 (EBS Parcel 70), the former Motor Pool Area Bldg. 1398 at 4th Ave. (EBS Parcel 148), the former Gas Station at Area 13 Bldg. 1394 (EBS Parcel 16), the former Motor Pool Area 600 GMO (EBS Parcel 149), the UST at former Gas Station Bldg. 694 (EBS Parcel 136), the Motor Pool Area 800 (EBS Parcel 164), the UST at Bldg. 888 Motor Pool (EBS Parcel 11), the Washrack Bldg. 866 (EBS Parcel 68), the UST at Bldg. 894 Motor Pool (EBS Parcel 12), the former Gas Mask Test Chambers Bldg. 439 (EBS Parcel 196), the former CS Training Area (EBS Parcel 198), and the Gas Mask Test Chamber Bldgs. T-401 and -402 (EBS Parcel 195).

The Quarter Master's Gas Storage (EBS Parcel 130) and the former Fuel Yard (EBS Parcel 131) were submitted previously with the Motor Pool 600. However, based on comments from the regulators, separate documents must be prepared for each of these parcels. The final work plans for each of these parcels will be submitted on a later date.

October 12, 1998

Mr. Ellis Pope

I have distributed copies of this document according to the distribution list indicated below. If you have questions or need further information, please contact me at (303) 793-5250.

Sincerely,

*Agnes Mayile*

*JAY* Jeanne A. Yacoub, P.E.  
Project Manager

**Attachments**

Ron Levy, Ft. McClellan (1 copy)

Chris Johnson, ADEM (2 copies)

Bobby Lewis, EPA Athens (1 copy)

Dennis Druck, CHPPM (6 copies)

Project Files

Lisa Kingsbury, Ft. McClellan (5 copies)

Bart Reedy, EPA Region IV (1 copy)

Hugh Vick, Gannett Fleming (3 copies)

Joe King, AEC (1 copy)

**Final**  
**Site-Specific Field Sampling Plan and**  
**Site-Specific Safety and Health Plan Attachments**  
**Former Decontamination Complex Building 1271**  
**(Parcels 93, 46, 140, and 70)**  
**Former Motor Pool Area 1300 (Parcels 148 and 16)**  
**Former Motor Pool Area 600 (Parcels 149 and 136)**  
**Motor Pool Area 800 (Parcels 164, 11, 68, and 12)**  
**Former Gas Mask Test Chambers**  
**(Parcels 195, 196, and 198)**

**Fort McClellan**  
**Calhoun County, Alabama**

**Delivery Order CK005**  
**Contract No. DACA21-96-D-0018**  
**IT Project No. 774645**

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**October 1998**

**Revision 1**

## ***Site-Specific Field Sampling Plans***

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Former Decontamination Complex Building 1271 (Parcels 93, 46, 140, and 70)

Former Motor Pool Area 1300 (Parcels 148 and 16)

Former Motor Pool Area 600 (Parcels 149 and 136)

Motor Pool Area 800 (Parcels 164, 11, 68, and 12)

Former Gas Mask Test Chambers (Parcels 195, 196, and 198)



**Final  
Site-Specific Field Sampling Plan Attachment  
Site Investigation at the Former Decontamination Complex  
Parcels 93(7), 46(7), 140(7), and 70(7)  
Fort McClellan  
Calhoun County, Alabama**

**Prepared for:**

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**Task Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**October 1998**

**Revision 1**

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## **List of Acronyms**

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ADEM	Alabama Department of Environmental Management
bls	below land surface
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CFC	chlorofluorocarbon
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
CWA	chemical warfare agent
DQO	data quality objective
E&E	Ecology & Environment, Inc.
EBS	environmental baseline survey
EM	electromagnetic
ESE	Environmental Sciences and Engineering, Inc.
FID	flame ionization detector
FTMC	Fort McClellan
GPR	ground penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
N-S	north to south
PA	preliminary assessment
PCE	perchloroethene
PID	photoionization detector
POL	petroleum, oil, and lubricants
PPE	personal protective equipment
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	sampling and analysis plan
SHP	installation-wide safety and health plan
SI	site investigation

## **List of Acronyms** *(Continued)*

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SSHP	site-specific safety and health plan
TAL	target analyte list
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
VSI	visual site inspection
WP	installation-wide work plan

## ***Executive Summary***

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In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Decontamination Complex, Parcels 93(7), 46(7), and 140(7) and 70(7). IT will collect 24 surface soil, 26 subsurface soil, 6 sediment, 6 surface water, 9 groundwater, and 4 depositional soil samples.

IT will collect samples for parameters that include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

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Parcel 93(7) and associated Parcels 140(7), 46(7), and 70(7), are located north on Main Post on the corner of 4th Avenue and First Street. This area is the Former Decontamination Complex which was built in 1941, and covers four acres (including parking areas). The site has one building still standing (1271) and several concrete foundations and paved areas. Parcel 70(7) is described in the environmental baseline survey (Ecology & Environment, Inc., 1998) on Table 6.0-1, Community Environmental Response Facilitation Act parcel descriptions, as a washrack and oil/water separator. In Section 5.1.3.7, it is described as the refuse dumpster and dump truck cleaning facility. The IT site visit in April, 1998, noted a small building with water hoses and other tools used for cleaning vehicles. A washrack or oil/water separator was not visible. Site investigation activities will be conducted to determine the presence or absence of potential contaminants at this site.

# **1.0 Project Description**

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## **1.1 Introduction**

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) (Figure 1-1). The SFSP is intended to be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) site, the habitat specific ecological risk assessment work plan, and the installation-wide work plan (WP) (IT, 1998b), and the SAP. The SAP includes the installation-wide safety and health plan (SHP), the waste management plan, and quality assurance plan (QAP).

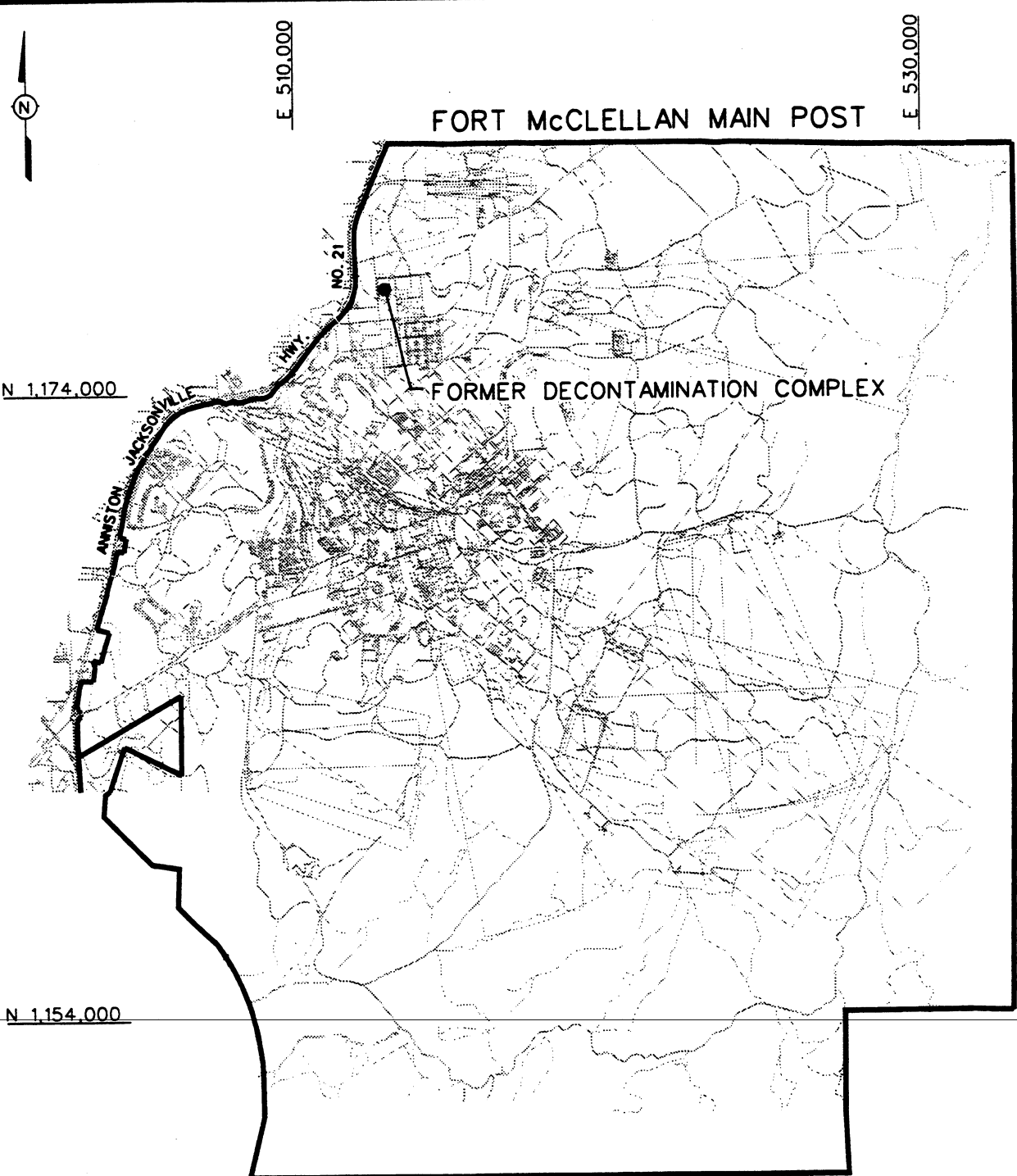
FTMC is located in Calhoun County in northeast Alabama (Figure 1-1). FTMC is comprised of three sections, the Main Post, Pelham Range, and Choccolocco Corridor. The area to be addressed during this SI is located on the northern portion of the Main Post. During the environmental baseline survey (EBS) (Environmental Sciences and Engineering, Inc. [ESE], 1998) this site was classified as Category 7: areas not previously evaluated or that require additional investigation. Figure 1-2 shows the general location for Parcel 93(7) and associated parcels.

## **1.2 Site Description**


Parcel 93(7) and associated Parcels 46(7), 140(7), and 70(7) are located north on Main Post on the corner of 4th Avenue and First Street. This area is the Former Decontamination Complex which was built in 1941, and covers four acres (including parking areas). The entire area is fenced except for Parcel 70(7). At the north end of the parcel (outside the fence) are two unimproved roads, one gravel and one dirt, connecting 4th Avenue and Third Street. The roads



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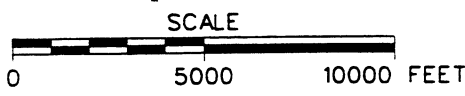


**LEGEND:**

 FORT McCLELLAN BOUNDARY

**FIGURE 1-1**  
**SITE LOCATION MAP**  
**FORMER DECONTAMINATION COMPLEX**  
**PARCELS 93(7), 46(7), 140(7)**  
**& 70(7)**

U. S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018





are in a heavily wooded area and are separated by large natural drainage features that apparently were formed when the roads were built. These features overlap with the marshy area at the northeastern end of the parcel and are typically wet. The drainage channels are approximately 600 feet (east to west) and approximately 8 feet wide. The roads have the appearance of being built in a marsh because they are several feet above the water in the drainageways. A marsh appears to be covering part of the pavement at the north end of the parcel inside the fence. The north end of the parcel, north of First Street, is a marshy area. Studies have not been conducted at Parcel 140(7), and information is not available concerning the shallow groundwater or a confining layer. Data gathered during the SI should provide more information for this parcel. The ground surface of the entire parcel is almost level, with surface water drainage to the west and northwest, except at the south end of the parcel, where drainage is south into Cane Creek. Cane Creek flows parallel to the west boundary of the parcel to the north-northwest. A concrete ditch also parallels the west boundary and drains into Cane Creek. A small, unnamed intermittent stream on the eastern boundary of the complex drains into Cane Creek. Elevation is approximately 740 feet.

The site has one building still standing (1271) and several concrete foundations and paved areas. The paved area at the north end of the parcel has vehicles stored on it. A potential tank location, Parcel 140(7), and the concrete foundation of a small service station are adjacent to First Street outside the fence. A large concrete structure could be seen in the heavy marsh area approximately 60 feet northeast of the small concrete foundation. It was almost covered with water and large grasses, so the size of the structure could not be determined. The majority of this structure appears to be underwater.

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Parcel 140(7) is a former gas station built in 1941. The building was a 9 by 21 foot cement foundation with corrugated steel walls. Two fuel pumps were located on an island directly in front of the building, approximately 20 feet away. The original plans called for two 10,000-gallon tanks for this building. Reportedly, the USTs for this gas station were located in front of the building. Information was not available to confirm that the tanks have been removed, so it is unknown whether they are still in place. Closure reports are not on file at FTMC or ADEM and may not have been required at the time of closure.

The paved area inside the fence south of First Street has several large portable storage units near the road. Near the east boundary are two large concrete foundations or pads that contain pipes

and some building debris. The northern pad appears to have vent pipes. The southern pad is what remains of building 1272.

Building 1271 is adjacent to 4th Street at the southern end of the parcel. In conjunction with Building 1272, it housed the 61st Chemical Company from 1961 to 1973. The company's mission was laundry and the Main Post bakery. This facility was a chemical laundry used to reimpregnate undergarments used in chemical exercises with paraffin. Waste from the laundry operation was discharged into the sanitary sewer. Reimpregnation activities used wax, chlorinated oils and reportedly, toluene and ethanol alcohol. In 1973, the 61st Chemical Company left FTMC and the 548th Battalion continued the mission, but the laundry discontinued the reimpregnation activities.

The 61st Chemical Company returned to FTMC in 1979, and from 1980 to 1994, this facility housed the Decontamination Apparatus Branch of the Directorate of Training. Twenty to forty M12A1 decontamination systems were stored on the ground for Chemical Corps Student exercises. From 1988 to 1990, other equipment was stored here, including the M17 Lightweight, Portable Decontamination Apparatus and the M93 FOX NBC Reconnaissance System. The Former Decontamination Complex was closed in 1994, and the mission was moved to the Decontamination Apparatus Training Facility at Nord Hall.

The CH2M Hill (1994) Storm Water Pollution Plan reported that ten drums of trichloromono-fluoromethane were found at Building 1272. FTMC Directorate of Environment removed the drums before this area was closed. The drums were recycled through the Defense Reutilization and Marketing Office (DRMO). Building 1272 was demolished in 1994, and Building 1271 is currently used to store furniture. The complex is now controlled by the Alabama Army National Guard.

The Decontamination Complex included chemical detection test kits that contained mercuric cyanide. The kits contained strips of paper that changed color in the presence of chemical warfare agents (CWA). In 1995, FTMC Directorate of Environment removed a drum containing mercuric cyanide and several chlorofluorocarbon (CFC) cans from Building 1271.

The 1993 Environmental Compliance Assessment System (ECAS) reported numerous oil stains at the site and an oil sheen on the adjacent creek as a result of vehicle operations at the Complex. In 1995, an investigation was conducted based on these findings. Soil, groundwater, surface

water and sediment samples were collected and analyzed for total petroleum hydrocarbons (TPH) diesel, TPH gasoline, and total lead. Three soil samples showed evidence of TPH diesel. The remainder of the samples were below detection limits for TPH. Total lead was found in every soil sample and in the sediment outfall sample. Oil stained surface soil was removed from the site (EBS, 1998).

A petroleum release reportedly occurred at the Complex, but specific information was not available. A potential for a hazardous release existed because of the chemical storage conducted at Building 1272 and the previous chemical laundry mission (EBS, 1998).

Behind Building 1271 and close to Cane Creek is the Parcel 46(7) tank site. During the site walk-over it was apparent that excavation work had been conducted. According to the EBS, one tank (heating oil, 2500 gal.) was removed and the other (heating oil, 3000 gal.) was closed in place in 1996. Releases from these tanks were not identified during the tank removal or closure activities. Both tanks had met tank tightness testing standards within the previous five years and were in compliance (EBS, 1998). Also located near the tank site is a large concrete pad that appears to be an old wash rack with a drainpipe on the eastern end.

Parcel 70(7) is located east of the main parcel (93[7]). It has Building 1298, the wash rack for the refuse dumpster and dump truck cleaning facility. It was built in 1960 and discharges to the sanitary sewer. This facility appears to be operating according to installation standards (USAEHA, 1986).

These parcels are covered with soils from the Anniston Series which consists of strongly acid, deep, well-drained soils that have developed in old local alluvium. The parent material of the Anniston soils has washed from the adjacent, higher lying soils. The surface horizon is mainly very dark brown loam, and the subsoil is mainly dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. The Anniston soils are on foot slopes and on alluvial fans at the base of mountains, and have lost nearly all their original surface soil through erosion. The upper layer is now reddish-brown gravelly clay loam, 4 to 6 inches thick. The amount of gravel ranges from a few scattered fragments to very many. A few areas have severely eroded soils, and many areas have shallow gullies.

The specific soil type from the Anniston Series that covers this site is Anniston and Allen gravelly loam, 2 to 6 percent slopes, eroded (AcB2). The texture of the subsoil ranges from light

clay loam to clay or silty clay loam. The alluvium ranges in thickness from 2 to more than 8 feet. Infiltration and runoff are medium, permeability is moderate, and the capacity for available moisture is high. Depth to water is typically greater than 20 feet below land surface (bls), and depth to bedrock is typically from 2 feet to greater than 10 feet bls. Bedrock material is limestone or shale (U.S. Department of Agriculture, 1961).

### ***1.3 Scope of Work***

The scope of work for activities associated with the Former Decontamination Complex, as specified in the statement of work (USACE, 1997b), include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 24 surface soil, 26 subsurface soil, 6 sediment, 6 surface water, 9 groundwater, and 4 depositional soil samples to determine the presence or absence of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

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## ***2.0 Summary of Previous Environmental Studies***

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Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the CERFA (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The Former Decontamination Complex was identified as a site where further evaluation was needed.

### **2.1 Buildings 1271-1272 -1993**

The 1993 Environmental Compliance Assessment System (ECAS) reported numerous oil stains at the site and oil sheen on the adjacent creek as a result of vehicle operations at the Complex. In 1995, an investigation was conducted based on these findings. Soil, ground water, surface water and sediment samples were collected and analyzed for TPH diesel, TPH gasoline, and total lead. The locations of those samples are unknown. Three soil samples showed evidence of TPH diesel. The remainder of the samples had levels of TPH below detection limits. Total lead was found in every soil sample and in the sediment outfall sample. Oil stained surface soil was removed from the site (EBS, 1998).

### **2.2 Building 1272 - 1994**

The CH2M Hill (1994) Storm Water Pollution Plan reported that ten drums of trichloromono-fluoromethane were found at Building 1272. FTMC Directorate of Environment removed the drums before this area was closed. The drums were recycled through the Defense Reutilization and Marketing Office (DRMO). Building 1272 was demolished in 1994.

### **2.3 Parcel 46(7)**

Behind Building 1271 (south) and closer to Cane Creek is the Parcel 46(7) tank site. According to the EBS, one tank (heating oil, 2500 gal.) was removed and the other (heating oil, 3000 gal.) was closed in place in 1996. Releases from these tanks were not identified during either the tank removal or the tank closure. Both tanks had met tank tightness testing standards within the previous five years and were in compliance.

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The first UST, a 2,500-gallon tank used for the storage of heating oil, was removed in February 1996. The closure report documented that a mild product odor was detected within the excavation. An examination of the removed tank noted that it was in good condition. Groundwater was observed flowing into the excavation at approximately five feet bls. Soil samples were collected and field screened for organic vapors. Contaminated soils were excavated and stockpiled. Stockpiled soils were sampled and analyzed for TPH. Analytical results indicated TPH concentrations of 2,780 ppm. Groundwater samples were not collected. Soil not exhibiting evidence of contamination was used to backfill the excavation. Approximately 36.6 yd<sup>3</sup> of soil was stockpiled. Attached to this closure report was justification for not obtaining closure samples.



The second UST, a 3,000-gallon tank used for storage of diesel fuel, was closed in place in March 1996. Depth to groundwater, determined by a soil boring completed in the vicinity of the tank pit, was approximately 5 feet bls. Groundwater samples were not collected. A tank removal closure sampling flow chart, which shows the decision logic for not obtaining closure samples, was presented in the report.

This parcel is being addressed as a site investigation associated with Base Realignment and Closure Activities at FTMC.

### ***3.0 Site-Specific Data Quality Objectives***

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#### ***3.1 Overview***

The data quality objectives (DQO) process is followed to evaluate data requirements and to support the decision-making process associated with the action selection for the Former Decontamination Complex and associated parcels. The DQO process as applied to FTMC is described in more detail in Table 3-1 of this SFSP and in Sections 3.2 and 4.3 of the WP (IT, 1998b). The purpose of this SI is to determine the presence or absence of chemical substances in the site media and to determine future actions at the parcels. A conceptual site exposure model (CSEM) has been developed for this effort. A conceptual model of the sites ensures the objectives of the SI are met and a basis for future action at the sites will be established. This SFSP, along with the necessary companion documents, has been designed to provide FTMC risk managers with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide defensible information required to confirm or to deny the existence of residual chemical contamination in site media.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

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Soil, groundwater, surface water, and sediment will be sampled and analyzed to meet the objectives of this SI at FTMC. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described herein. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Table 3-1

**Summary of Data Quality Objectives**  
**Site Investigation, Former Decontamination Complex,**  
**Parcels 93(7), 140(7), 70(7) and 46(7)**  
**Fort McClellan, County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Chemical laundry USTs oil/water separator  <u>Migration Pathways</u> Infiltration to surface and subsurface soil Dust emissions and volatilization to air. Leaching to groundwater Runoff and erosion to surface water and depositional soil. Groundwater discharge to surface water  <u>Potential Receptors</u> Groundskeeper Construction worker Recreational site user Resident  <u>PSSC</u> Petroleum by-products Metals Chlorinated oils Toluene and ethyl alcohol Cyanide	Surface Water Sediment Surface Soil Subsurface Soil Groundwater Depositional Soil	SI to confirm whether PSSC are present in the site media.  Definitive quality data for future decision making	<u>Surface soil</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, TAL Metals  <u>Subsurface Soil</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, TAL Metals  <u>Groundwater</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, Tot. TAL Metals  <u>Surface Water</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, Tot. TAL Metals  <u>Sediment</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, TOC, Grain size, TAL Metals  <u>Depositional Soil</u> TCL VOCs and SVOCs CL Pesticides/Herbicides PCBs, OP Pesticides, Cyanide, TAL Metals	Definitive and CESAS Level B  Definitive and CESAS Level B  Definitive and CESAS Level B  Definitive and CESAS Level B  Definitive and CESAS Level B  Definitive and CESAS Level B	26 direct-push + QC  26 direct-push + QC  9 direct-push + QC  6 + QC  6 + QC  4 + QC

ADEM - Alabama Department of environmental Management.  
 CESAS - Corps of Engineers South Atlantic Savannah.  
 DOD - U.S. Department of Defense.  
 EPA - U.S. Environmental Protection Agency.  
 PSSC - Potential site-specific chemical.  
 QC - Quality control.

SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 TCL - Target Compound list.  
 TOC - Total organic carbon.  
 USACE - U.S. Army Corps of Engineers.  
 VOC - Volatile organic compound.

### **3.2 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting all possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contaminants at this site include a wide variety of chemicals and petroleum products arising from the diverse activities formerly performed various locations on the site. Potential contaminant release was probably to surface and subsurface soil. Potential contaminant pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, groundwater discharge to the surface, and runoff and erosion to surface water and sediment to the marshy area at the north end of the site, in the drainage ditch and the intermittent drain into Cane Creek, and in Cane Creek itself. ~~Dust emissions and volatilization to air, although unlikely to~~ produce toxicologically significant airborne concentrations, potentially complete transport pathways.

The Former Decontamination Complex is a four-acre fenced area with one standing building. The rest of the site consists of paved or gravel areas, building foundations or areas of marsh. Plausible receptors under current site industrial use scenario include the groundskeeper and the construction worker. It is assumed that the fence effectively precludes the entrance of site visitors. It is anticipated that future site use will continue to be industrial. Thus, plausible future receptor scenarios include the groundskeeper, construction worker, and recreational site user. The resident is also evaluated for purposes of conservatism. Potential source media include surface, subsurface, and depositional soil, groundwater, surface water, and sediment.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

### ***3.3 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) site. Data uses and needs are summarized in Table 3-1.

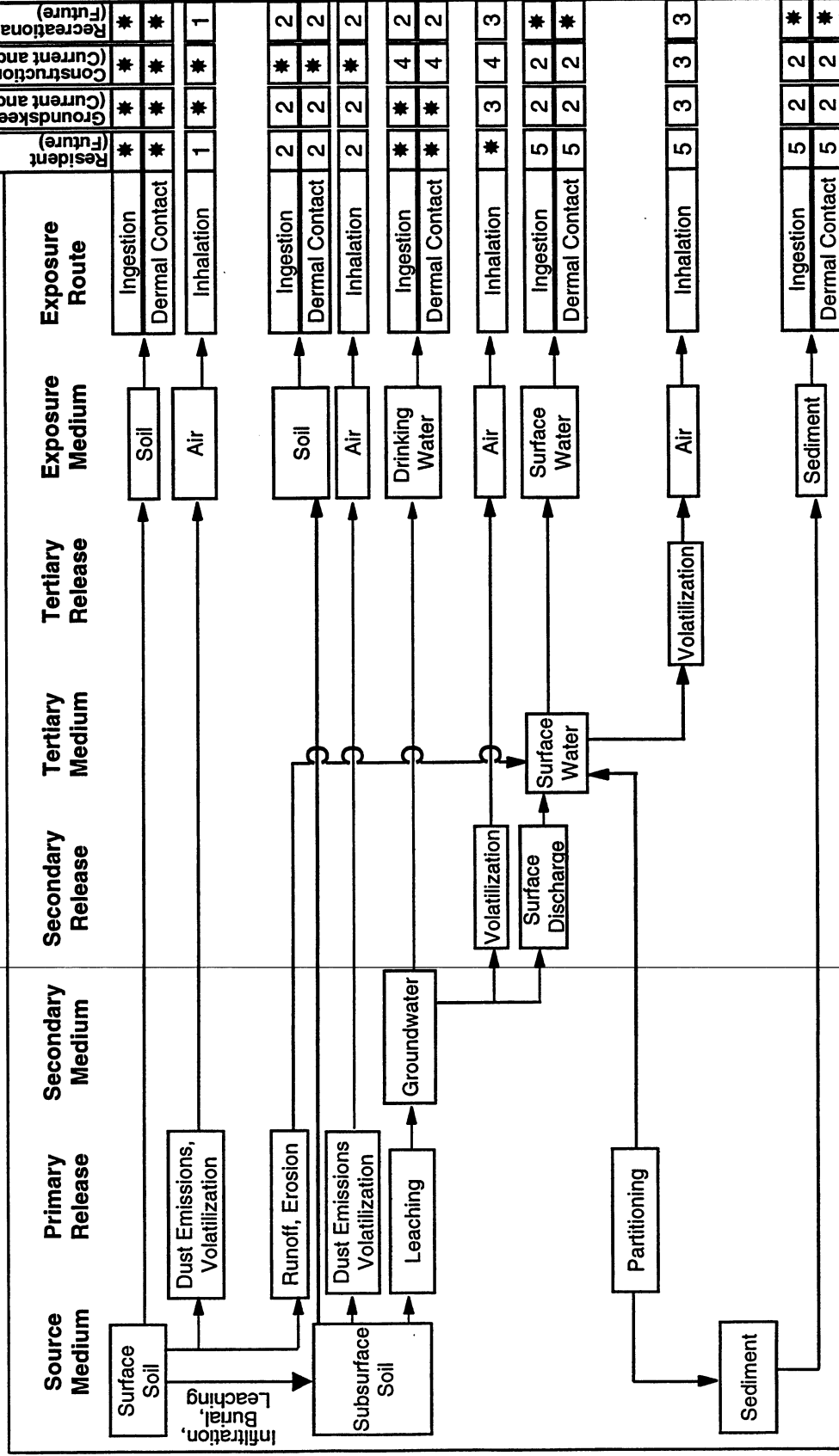
#### ***3.3.1 Risk Evaluation***

Confirmation of the presence or absence of contamination at the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) site will be based on a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. Definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a feasibility study and risk assessment.

#### ***3.3.2 Data Types and Quality***

Surface and subsurface soil, depositional soil, sediment, surface water and ground water will be sampled and analyzed in order to meet the objectives of the site investigation at the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7) site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

**Figure 3-1**  
**Human Health Conceptual Site Exposure Model**  
**for the Former Decontamination Complex, Parcels 93(7), 46(7), 140(7), and 70(7)**  
**Fort McClellan, Alabama**



\* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.  
 2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the construction worker would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

### ***3.3.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this site investigation are provided in Section 9.0 of the QAP.

## **4.0 Field Activities**

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The parcels of property being investigated under this SI were identified during the EBS (ESE, 1998) and categorized as a Category 7 site. Category 7 indicates the sites that have not been evaluated or need additional investigation. To meet the objectives of Sections 1.4 and 3.0, the environmental sampling program will consist of surface and subsurface soil sampling, groundwater sampling, surface water and sediment sampling, and depositional soil sampling.

### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Geophysical Survey**

Parcel 140(7) is reported to contain two 10,000-gallon UST; however, the exact location of the two former USTs could not be confirmed during either the EBS (ESE, 1998) or the IT site visit in April 1998. Therefore, a geophysical survey will be conducted at Parcel 140(7) to locate the USTs in order to place the proposed sample locations within the proper area of concern.

Based on available site information, the geophysical survey will include data acquisition using the G-858G magnetic gradiometer, EM31, and EM61. Inclusion of an EM34-3XL survey will only be considered at sites in which the UST depth of burial could exceed 10 feet. If the magnetic or EM data indicate anomalies potentially caused by tanks, GPR will be used to further characterize the source object(s). Ground penetrating radar will also be used in portions of the site where the response from surface features (e.g., structures, reinforced concrete pads, metal fences) and/or subsurface features, such as utility corridors, would likely obscure the magnetic and/or EM response from a tank.

#### **4.2.1 Methodology and Instrumentation**

Geophysical survey procedures used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the installation-wide SAP and the following IT standard operating procedures



(SOP) for geophysical investigations:

- ITGP-001; Surface Magnetic Surveys
- ITGP-002; Surface Frequency-Domain EM Surveys
- ITGP-003; GPR Surveys
- ITGP-004; Surface Time-Domain EM Surveys
- ITGP-005; Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely locations of the target USTs.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pin flags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EMI and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. All geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. Ground-penetrating radar will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at Parcel 140(7) will be incorporated into the SI report. Geophysical results will be used to properly position the proposed sample locations at Parcel 140(7).

#### **4.2.2 Areal Coverage**

Parcel 140(7) geophysical surveys will encompass an area of approximately 100 by 100 feet.

The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2-foot intervals along N-S and E-W oriented survey lines spaced 10 feet apart.
- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for

large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G-858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized.

#### ***4.2.3 Underground Storage Tank Exploratory Test Pits***

Upon completion of the geophysical survey at each site, the data will be reviewed for possible anomalies indicative of USTs. Anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations for USTs will be labeled as potential USTs.

At each anomaly labeled as a potential UST, an exploratory test pit will be excavated to determine if the feature or anomaly detected is either a UST or is not a UST. These UST exploratory test pits will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location and observations will be recorded in the field log.

If some type of material other than a UST is found, the type of material and location will be noted in the field log and the material will be placed back in the excavation. The location will be marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label "potential UST" will be removed from the location of the geophysical anomaly.

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#### ***4.3 Environmental Sampling***

The environmental sampling performed during the site investigation at the Former Decontamination Complex, Parcel 93(7), will include the collection of surface soil, subsurface soil, sediment, surface water, groundwater and depositional soil for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media, and rationale are summarized in Table 4-1. Samples will be submitted for laboratory analyses of the parameters listed in Section 4.6 of site related parameters. The sample designations and QA/QC sample quantities are shown in Tables 4-2, 4-3 and 4-4.

**Table 4-1**

**Site Sampling Rationale  
Former Decontamination Complex  
Parcels 93(7), 140(7), 70(7), and 46(7)  
Fort McClellan, Alabama**

(Page 1 of 6)

Sample Location	Media	Rationale
FTA-93-GP01	SUBSURFACE SOIL	Surface and subsurface soil will be collected north of the potential tank location for analysis to determine if PSSC are present.
FTA-93-GP02	SUBSURFACE SOIL	Surface and subsurface soil will be collected east of the potential tank location for analysis to determine if PSSC are present.
FTA-93-GP03	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected to determine if PSSC are present.
FTA-93-GP04	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected to determine if PSSC are present.
FTA-93-GP05	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected north of the concrete pad to determine if PSSC are present.
FTA-93-GP06	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected east of the concrete pad to determine if PSSC are present.
FTA-93-GP07	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected south of the concrete pad to determine if PSSC are present.

**Site Sampling Rationale**  
**Former Decontamination Complex**  
**Parcels 93(7), 140(7), 70(7), and 46(7)**  
**Fort McClellan, Alabama**

(Page 2 of 6)

Sample Location	Media	Rationale
FTA-93-GP08	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected west of the concrete pad to determine if PSSC are present.
FTA-93-GP09	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected for coverage midway between the concrete pad and the front fence to determine if PSSC are present
FTA-93-GP10	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected north (downgradient) of Building 1271 to determine if PSSC are present
FTA-93-GP11	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected north(downgradient) of Building 1272 foundation pad to determine if PSSC are present
FTA-93-GP12	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected west of Building 1271 to determine if PSSC are present between the building and the boundary fence
FTA-93-GP13	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected east of Building 1271 to determine if PSSC are present
FTA-93-GP14	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected south of Building 1271 to determine if PSSC are present
FTA-93-GP15	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected west of the old building pad (1272) to determine if PSSC are present

**Table 4-1**

**Site Sampling Rationale  
Former Decontamination Complex  
Parcels 93(7), 140(7), 70(7), and 46(7)  
Fort McClellan, Alabama**

(Page 3 of 6)

Sample Location	Media	Rationale
FTA-93-GP16	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected east of the old building pad (1272) to determine if PSSC are present
FTA-93-GP17	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected south of the old building pad (1272) to determine if PSSC are present
FTA-93-GP18	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northwest of tank location 46(7) to determine if PSSC are present
FTA-93-GP19	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northeast of tank location 46(7) to determine if PSSC are present
FTA-93-GP20	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected south of the tank location 46(7) to determine if PSSC are present
FTA-93-GP21	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northwest of the floor drain in the wash rack concrete pad to determine if PSSC are present
FTA-93-GP22	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northeast of the floor drain in wash rack concrete pad to determine if PSSC are present

**Site Sampling Rationale  
Former Decontamination Complex  
Parcels 93(7), 140(7), 70(7), and 46(7)  
Fort McClellan, Alabama**

(Page 4 of 6)

Sample Location	Media	Rationale
FTA-93-GP23	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northwest of the oil/water separator to determine if PSSC are present
FTA-93-GP24	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected northeast of the oil/water separator to determine if PSSC are present
FTA-93-GP25	SURFACE SOIL SUBSURFACE SOIL	Surface and subsurface soil will be collected south of Parcel 70(7) to determine if PSSC are present
FTA-93-GP26	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and ground water will be collected to provide coverage in the yard near the old fueling station to determine if PSSC are present
FTA-93-SW/SD01	SURFACE WATER SEDIMENT	Surface water and sediment will be collected from the drainage northwest of the site to determine if PSSC are present. Sampling location represents a lower elevation area where surface water could collect and percolate into the substratum.

**Site Sampling Rationale**  
**Former Decontamination Complex**  
**Parcels 93(7), 140(7), 70(7), and 46(7)**  
**Fort McClellan, Alabama**

(Page 5 of 6)

Sample Location	Media	Rationale
FTA-93-SW/SD02	SURFACE WATER SEDIMENT	Surface water and sediment will be collected from the marshy area north of the site near the center of the boundary to determine if PSSC are present.
FTA-93-SW/SD03	SURFACE WATER SEDIMENT	Surface water and sediment will be collected inside the concrete structure in the marsh to determine if PSSC are present. Sampling location represents water and sediment associated with a productive wetland/marsh habitat that has developed at this site. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-93-SW/SD04	SURFACE WATER SEDIMENT	Surface water and sediment will be collected in the marshy area between Parcel 70(7) and 93(7) fence to determine if PSSC are present.
FTA-93-SW/SD05	SURFACE WATER SEDIMENT	Surface water and sediment will be collected from the stream at the south end of the parcel east of the bridge and the motor pool concrete slab. Sample location is a potential downgradient sink for contaminants from the site. Evidence of contaminant mobility at any point within the site would likely be integrated at this location. Water from the site at this point (adjacent to drain from motor pool concrete slab) was noted to have a dramatic orange color.
FTA-93-SW/SD06	SURFACE WATER SEDIMENT	Surface water and sediment will be collected at the southwest corner of the parcel from the stream and downgradient from SW05/SD05.
FTA-93-DEP01	DEPOSITIONAL SOIL	Depositional Surface and subsurface soil will be collected from the south edge of the marsh approximately at the center between the fence and the road. Sampling location represents a lower elevation area associated with the wetland/marsh where surface water runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.
FTA-93-DEP02	DEPOSITIONAL SOIL	Depositional Surface and subsurface soil will be collected from the front of the fenced area, adjacent to the fence and the south edge of the marsh. Sampling location represents a lower elevation area associated with the wetland/marsh where surface water runoff could collect, and potentially percolate into the substratum, or potentially deposit dissolved materials after evaporation.



**Table 4-1**

**Site Sampling Rationale  
Former Decontamination Complex  
Parcels 93(7), 140(7), 70(7), and 46(7)  
Fort McClellan, Alabama**

(Page 6 of 6)

<b>Sample Location</b>	<b>Media</b>	<b>Rationale</b>
FTA-93-DEP03	DEPOSITIONAL SOIL	Depositional Surface and subsurface soil will be collected from the southeast boundary at a point between the concrete floor slab and the motor pool concrete slab and at the southeast corner of the motor pool concrete slab, which two locations are the most probable points of exit from the site for surface water runoff.
FTA-93-DEP04	DEPOSITIONAL SOIL	Depositional Surface and subsurface soil will be collected from the southeast boundary at a point between the concrete floor slab and the motor pool concrete slab and at the southeast corner of the motor pool concrete slab, which two locations are the most probable points of exit from the site for surface water runoff.

Table 4-2

**Surface and Depositional Soil Sample Designations and QA/QC Sample Quantities  
Former Decontamination Complex, Parcels 93(7), 140(7), and 46(7)  
Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicate	Field Splits	Matrix Spike Duplicate	
FTA-93-GP03	FTA-93-GP03-SS-DA0003-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP04	FTA-93-GP04-SS-DA0004-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP05	FTA-93-GP05-SS-DA0005-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP06	FTA-93-GP06-SS-DA0006-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP07	FTA-93-GP07-SS-DA0007-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP08	FTA-93-GP08-SS-DA0008-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP09	FTA-93-GP09-SS-DA0009-REG	0-1.0			FTA-93-GP09-SS-DA0009-MS FTA-93-GP09-SS-DA0009-MSD	TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP10	FTA-93-GP10-SS-DA0010-REG	0-1.0	FTA-93-GP10-SS-DA0011-FD	FTA-93-GP10-SS-DA0012-FS		TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP11	FTA-93-GP11-SS-DA0013-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP12	FTA-93-GP12-SS-DA0014-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP13	FTA-93-GP13-SS-DA0015-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP14	FTA-93-GP14-SS-DA0016-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP15	FTA-93-GP15-SS-DA0017-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP16	FTA-93-GP16-SS-DA0018-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP17	FTA-93-GP17-SS-DA0019-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP18	FTA-93-GP18-SS-DA0020-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP19	FTA-93-GP19-SS-DA0021-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP20	FTA-93-GP20-SS-DA0022-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP21	FTA-93-GP21-SS-DA0023-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP22	FTA-93-GP22-SS-DA0024-REG	0-1.0	FTA-93-GP22-SS-DA0025-FD	FTA-93-GP22-SS-DA0026-FS		TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP23	FTA-93-GP23-SS-DA0027-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP24	FTA-93-GP24-SS-DA0028-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP25	FTA-93-GP25-SS-DA0029-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP26	FTA-93-GP26-SS-DA0030-REG	0-1.0			FTA-93-GP26-SS-DA0030-MS FTA-93-GP26-SS-DA0030-MSD	TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide

Table 4-2

**Surface and Depositional Soil Sample Designations and QA/QC Sample Quantities**  
**Former Decontamination Complex, Parcels 93(7), 140(7), and 46(7)**  
**Fort McClellan, Calhoun County, Alabama**

(Page 2 of 2)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicate	Field Splits	Matrix Spike Duplicate	
FTA-93-DEP01	FTA-93-DEP01-DEP-DA0031-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-DEP02	FTA-93-DEP02-DEP-DA0032-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-DEP03	FTA-93-DEP03-DEP-DA0033-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-DEP04	FTA-93-DEP04-DEP-DA0034-REG	0-1.0				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide

\*Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observations.

\*Sample depth will be immediately below the estimated depth of the bottom of the UST.

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound

SVOC - Semivolatile organic compound.

TCL - Target compound list

TAL - Target analyte list.

TOC - Total Organic Carbon

Table 4-3

**Subsurface Soil Sample Designations and QA/QC Sample Quantities**  
**Former Decontamination Complex,**  
**Parcels 93(7), 140(7), 70(7) and 46(7)**  
**Fort McClellan, Calhoun County, Alabama**

(Page 1 of 2)

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicate	Field Splits	Matrix Spike Matrix Spike Duplicate	
FTA-93-GP01	FTA-93-GP01-DS-DA0035-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP02	FTA-93-GP02-DS-DA0036-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP03	FTA-93-GP03-DS-DA0037-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP04	FTA-93-GP04-DS-DA0038-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP05	FTA-93-GP05-DS-DA0039-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP06	FTA-93-GP06-DS-DA0040-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP07	FTA-93-GP07-DS-DA0041-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP08	FTA-93-GP08-DS-DA0042-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP09	FTA-93-GP09-DS-DA0043-REG	a			FTA-93-GP09-DS-DA0043-MS	TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP10	FTA-93-GP10-DS-DA0044-REG	a			FTA-93-GP09-DS-DA0043-MSD	TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP11	FTA-93-GP11-DS-DA0045-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP12	FTA-93-GP12-DS-DA0046-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP13	FTA-93-GP13-DS-DA0047-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP14	FTA-93-GP14-DS-DA0048-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP15	FTA-93-GP15-DS-DA0049-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP16	FTA-93-GP16-DS-DA0050-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP17	FTA-93-GP17-DS-DA0051-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP18	FTA-93-GP18-DS-DA0052-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP19	FTA-93-GP19-DS-DA0053-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP20	FTA-93-GP20-DS-DA0054-REG	b				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP21	FTA-93-GP21-DS-DA0055-REG	a	FTA-93-GP21-DS-DA0056-FD	FTA-93-GP21-DS-DA0057-FS		TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP22	FTA-93-GP22-DS-DA0058-REG	a	FTA-93-GP22-DS-DA0059-FD	FTA-93-GP22-DS-DA0060-FS		TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP23	FTA-93-GP23-DS-DA0061-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP24	FTA-93-GP24-DS-DA0062-REG	a				TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide
FTA-93-GP25	FTA-93-GP25-DS-DA0063-REG	a	FTA-93-GP25-DS-DA0064-FD	FTA-93-GP25-DS-DA0065-FS		TCL VOCs, TCL SVOCs, CL Pesticides, CL Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide

Table 4-3

Subsurface Soil Sample Designations and QA/QC Sample Quantities  
Former Decontamination Complex,  
Parcels 93(7), 140(7), 70(7) and 46(7)  
Fort McClellan, Calhoun County, Alabama

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<sup>a</sup>Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observations.  
<sup>b</sup>Sample depth will be immediately below the estimated depth of the bottom of the UST.

MS/MSD - Matrix spike/matrix spike duplicate.  
NA - Not applicable.  
QA/QC - Quality assurance/quality control.  
VOC - Volatile organic compound

SVOC - Semivolatile organic compound.  
TCL - Target compound list  
TAL - Target analyte list.  
TOC - Total Organic Carbon

Table 4-4

**Groundwater Sample Designations and QA/QC Sample Quantities**  
**Former Decontamination Complex,**  
**Parcels 93(7), 140(7), 70(7), and 46(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Spills	MS/MSD	
FTA-93-GP10	FTA-93-GP10-GW-DA3001-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP11	FTA-93-GP11-GW-DA3002-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP18	FTA-93-GP18-GW-DD3003-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP19	FTA-93-GP19-GW-DD3004-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP21	FTA-93-GP21-GW-DA3005-REG	a	FTA-93-GP21-GW-DA3008-FD	FTA-93-GP21-GW-DA3007-FS		TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP22	FTA-93-GP22-GW-DA3008-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP23	FTA-93-GP23-GW-DF3009-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP24	FTA-93-GP24-GW-DF3010-REG	a				TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide
FTA-93-GP26	FTA-93-GP26-GW-DA3011-REG	a			FTA-93-GP26-GW-DA3011-MS FTA-93-GP26-GW-DA3011-MSD	TCL VOCs and TCL SVOCs, PCBs, Cl Pesticides/Herbicides, OP Pesticides, Total TAL Metals, Cyanide

\*Direct-push temporary well will be installed at the water table (at a depth where sufficient water is encountered) to collect a groundwater sample.

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

TAL - Target analyte list.

VOC - Volatile organic compound.

#### **4.3.1 Surface Soil Sampling**

Surface soil samples will be collected from 24 soil borings at the Former Decontamination Complex site.

##### **4.3.1.1 Sample Locations and Rationale**

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.3.1.2 Sample Collection Procedures**

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.11 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from 26 soil borings at the former Decontamination Complex site.

##### **4.3.2.1 Sample Locations and Rationale**

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Subsurface soil samples will be collected from the same soil borings as described in Section 4.3.1.1. Subsurface soil samples will be collected from the 26 soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.3.2.2 Sample Collection Procedures**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP.





Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously from 1 foot bgs to 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the sample intervals indicate elevated levels (above background-ambient air); the deepest interval collected will be submitted to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects potential site-specific chemicals (PSSC). Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

Soil borings will be installed next to existing USTs. The subsurface soil samples will be collected immediately below the bottom of the UST. However, if other soil sample intervals appear to contain higher levels of PSSC, then samples may be selected at the higher concentration depth interval or in addition to the original proposed depth interval. Actual selection of the subsurface soil sample interval to be submitted for analysis will depend on the observations by the field geologist.

#### ***4.3.3 Direct-Push Groundwater Sampling***

Groundwater samples will be collected from direct-push soil borings installed at the site. Direct-push temporary wells will be installed in each soil boring described in Section 4.3.2 to collect groundwater samples.

Table 4-5

**Surface Water and Sediment Soil  
Sample Designations and QA/QC Sample Quantities  
Former Decontamination Complex,  
Parcels 93(7), 140(7), 70(7), and 46(7)  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-93-SW/SD01	FTA-93-SW/SD01-SW-DA2001-REG	NA				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD01-SD-DA1001-REG	0-0.5				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide
FTA-93-SW/SD02	FTA-93-SW/SD02-SW-DA2002-REG	NA				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD02-SD-DA1002-REG	0-0.5				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide
FTA-93-SW/SD03	FTA-93-SW/SD03-SW-DA2003-REG	NA				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD03-SD-DA1003-REG	0-0.5				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide
FTA-93-SW/SD04	FTA-93-SW/SD04-SW-DA2004-REG	NA				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD04-SD-DA1004-REG	0-0.5				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide
FTA-93-SW/SD05	FTA-93-SW/SD05-SW-DA2005-REG	NA	FTA-93-SW/SD05-SW-DA2006-FD	FTA-93-SW/SD05-SW-DA2007-FS		TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD05-SD-DA1008-REG	0-0.5	FTA-93-SW/SD05-SD-DA1009-FD	FTA-93-SW/SD05-SD-DA1010-FS		TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide
FTA-93-SW/SD06	FTA-93-SW/SD06-SW-DA2011-REG	NA				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, Total TAL Metals, Cyanide
	FTA-93-SW/SD06-SD-DA1012-REG	0-0.5				TCL VOCs, TCL SVOCs, CL Pesticides/Herbicides, PCBs, OP Pesticides, TAL Metals, Cyanide, TOC, Grain Size, Cyanide

MS/MSD - Matrix spike/matrix spike duplicate.  
QA/QC - Quality assurance/quality control.  
TAL - Target analyte list.  
TCL - Target compound list.  
TOC - Total organic compound.  
VOC - Volatile organic compound.

### **4.3.5 Sediment Sampling**

Six sediment samples will be collected at the same locations as the six surface water samples presented in Section 4.3.4.

#### **4.3.5.1 Sample Locations and Rationale**

The tentative locations for the six sediment samples to be collected are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample quantities are listed in Table 4-5. The actual sediment sample points selected will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

#### **4.3.5.2 Sample Collection Procedures**

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

### **4.3.6 Depositional Soil Sampling**

Four depositional soil samples will be collected. Two samples will be collected from the southern edge of the marsh and two will be collected at the southern end of the parcel near Cave Creek.

#### **4.3.6.1 Sample Locations and Rationale**

Depositional soil samples will be collected from four locations: two at the marsh and two near Cave Creek. The sampling rationale is listed in Table 4-1. The proposed tentative sampling locations are shown in Figure 4-1. The depositional soil sample designations and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample points selected will be at the discretion of the ecological sampler based on the drainage pathways and on actual field observations.

#### **4.3.6.2 Sample Collection Procedures**

Depositional soil samples will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in

Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6, which includes the addition of total organic carbon and grain size analyses.

#### **4.4 Surveying of Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells (micro-wells) to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for both horizontal coordinates and elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### **4.5 Decontamination Requirements**

Sampling and nonsampling equipment will be decontaminated primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination requirements are detailed in Section 4.10.1 of the SAP (IT, 1998a). Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.9.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.9.1.2 of the SAP.

#### **4.6 Analytical Program**

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The on-site sample coordinator will provide sampling containers, preservatives, and will coordinate sampling procedures with the field sampling crews in accordance with Table 5-1 in the QAP. The specific suite of analyses to be performed is based on the PSSC historically at the site and EPA, ADEM, FTMC, and USACE requirements. Target analyses for

samples collected from the Former Decontamination Complex consist of the following list of parameters:

- TCL VOCs - Method 5035/6260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000
- Chlorinated Pesticides - Method 8081A
- PCBs - Method 8082
- Organophosphorus Pesticides - Method 8141A
- Chlorinated Herbicides - Method 8151A
- Cyanide - Method 9010B
- Total organic carbon - Method 9060 (sediment only)
- Grain size - American Society for Testing and Materials D421/D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-6 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

#### ***4.7 Sample Preservation, Packaging, and Shipping***

Sample preservation, packaging, and shipping will follow requirements specified in Section 4.13.2 of the SAP (IT, 1998a).

Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

**Analytical Samples**  
**Former Decontamination Complex**  
**Parcels 93(7), 140(7), 70(7), and 46(7)**  
**Fort McClellan, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples*					Quanterra		QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spills w/ QA Lab (5%)	MSMSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis		
Former Decontamination Complex (Parcels 93(7), 140(7), 70(7), and 46(7): 9 groundwater, 6 surface water, 24 surface, 26 subsurface soil, 6 sediment, 4 depositional soil														
TCL VOCs	5035/8260B	water	normal	15	1	15	2	1	1	1	4	1	24	1
TCL SVOCs	8270C	water	normal	15	1	15	2	1	1	1		1	20	0
Cl Pesticides	8081A	water	normal	15	1	15	2	1	1	1		1	20	0
PCBs	8082	water	normal	15	1	15	2	1	1	1		1	20	0
OP Pesticides	8141A	water	normal	15	1	15	2	1	1	1		1	20	0
Cl Herbicides	8151A	water	normal	15	1	15	2	1	1	1		1	20	0
Cyanide, Total	9010B/9012A	water	normal	15	1	15	2	1	1	1		1	20	0
Tot TAL Metals	6010B/7000	water	normal	15	1	15	2	1	1	1		1	20	0
TCL VOCs	5035/8260B	soil	normal	60	1	60	6	3	3	3		3	75	5
TCL SVOCs	8270C	soil	normal	60	1	60	6	3	3	3		3	75	0
Cl Pesticides	8081A	soil	normal	60	1	60	6	3	3	3		3	75	0
PCBs	8082	soil	normal	60	1	60	6	3	3	3		3	75	0
OP Pesticides	8141A	soil	normal	60	1	60	6	3	3	3		3	75	0
Cl Herbicides	8151A	soil	normal	60	1	60	6	3	3	3		3	75	0
Cyanide, Total	9010B/9012A	soil	normal	60	1	60	6	3	3	3		3	75	0
TAL Metals	6010B/7000	soil	normal	60	1	60	6	3	3	3		3	75	0
TOC	9060	sediment	normal	6	1	6							6	0
Grain Size	ASTM D-421/D-422	sediment	normal	6	1	6							6	0
Former Decontamination Complex Subtotal:														
				612		64		32	32	4		32	776	6

\*Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Ship samples to:

Quanterra Environmental Services  
5915 Middlebrook Pike  
Knoxville, Tennessee 37921  
Attn: John Reynolds  
Tel: 423-588-6401  
Fax: 423-584-4315

USACE Laboratory split samples  
are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Tel: 770-919-5270

QA/QC - Quality assurance/quality control.  
MS/MSD - Matrix spike/matrix spike duplicate.  
VOC - Volatile organic compound.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
TOC - Total organic carbon.

TCL - Target compound list.  
PCB - Polychlorinated biphenyls.  
CI - Chlorinated.  
OP - Organophosphorus.

Sample Receiving  
Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401.

Field split samples will be shipped to:

Sample Receiving  
USACE South Atlantic Division Laboratory  
611 South Cobb Drive  
Marietta, Georgia 30060  
Telephone: (770) 919-5270.

#### ***4.8 Investigation-Derived Waste Management and Disposal***

(IDW) will be managed and disposed of as outlined in Appendix D of the SAP (IT, 1998a). The IDW expected to be generated from the field sampling at FTMC will consist of purge water from temporary well development and sampling activities, decontamination fluids, spent well materials, and personal protective equipment (PPE). IDW will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.



## 6.0 References

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**Final  
Site-Specific Field Sampling Plan Attachment  
Site Investigation at Former Motor Pool Area  
1300, Parcels 148(7) and 16(7)  
Fort McClellan  
Calhoun County, Alabama**

**Prepared For:**

**U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street,  
Mobile, Alabama 36602**

**Prepared By:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

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**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**October 1998**

**Revision 1**

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## **List of Acronyms**

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ADEM	Alabama Department of Environmental Management
ASR	archives search report
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
E-W	east to west
FTMC	Fort McClellan
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
N-S	north to south
PSSC	potential site-specific chemical
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SI	site investigation
SSHP	site-specific safety and health plan
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
WP	installation-wide work plan

## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation (SI) at Fort McClellan, Calhoun County, Alabama at the Former Motor Pool Area 1300, Parcel 148(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Motor Pool Area 1300, Parcel 148(7). IT will collect 12 surface soil, 10 subsurface soil, 8 groundwater, 2 surface water, 2 sediment, and 1 depositional soil sample.

IT will collect samples for parameters that include volatile organic compounds, semivolatile organic compounds, metals, and total target analyte list metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP) and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Motor Pool Area 1300, Parcel 148(7) will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat specific ecological risk assessment work plan and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Former Motor Pool Area 1300, Parcel 148(7) was historically identified as a Motor Park (FTMC General Layout Map, 1964). Light vehicle maintenance may have been performed here; however, the motor pool is primarily used for vehicle storage. Because of the lack of information concerning potential contaminants at this site, an SI is being conducted to determine the presence or absence of contaminants.

## **1.0 Project Description**

---

### **1.1 Introduction**

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 1300, Parcel 148(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

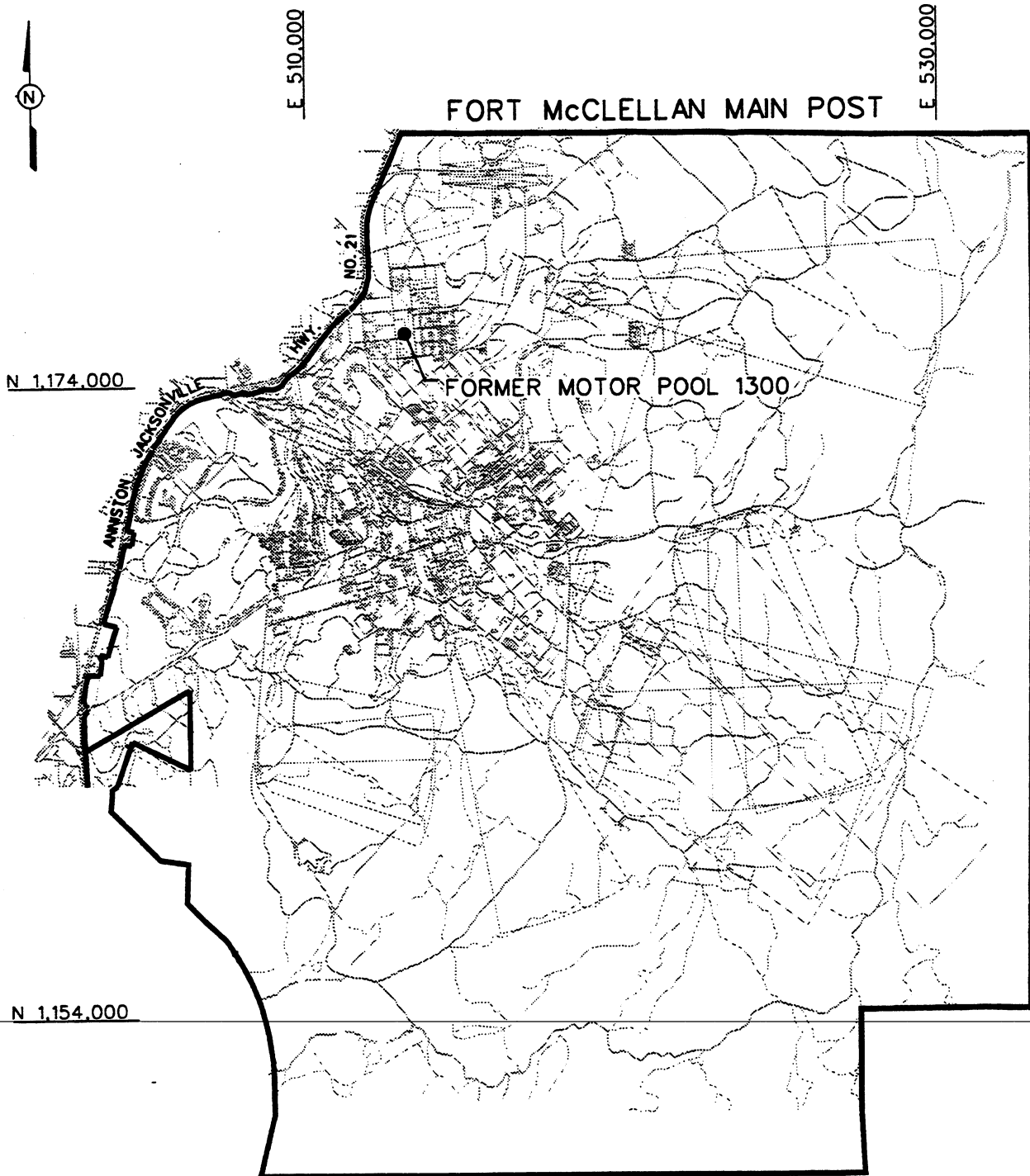
This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 1300, Parcel 148(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Motor Pool Area 1300, Parcel 148(7), the habitat specific ecological risk assessment work plan and the installation-wide work plan (WP) (IT, 1998b), and the SAP. The SAP includes the installation-wide safety and health plan (SHP), the waste management plan, and quality assurance plan (QAP).

### **1.2 Site Description**

The Former Motor Pool Area 1300, Parcel 148(7) is located northwest on Main Post (Figure 1-1). This area is a rectangular plot bounded by Fourth Street on the north, Third Avenue on the east, Ninth Avenue on the south, and Fourth Avenue on the west (Figure 1-2). This area was historically identified as a Motor Park (FTMC General Layout Map, 1964). Light vehicle maintenance may have been performed here; however, the motor pool is primarily used for vehicle storage. The Community Environmental Response Facilitation Act (CERFA) Parcel Descriptions, indicate that a wash rack and oil/water separator were located here. Evidence of neither the wash rack nor the oil/water separator was observed on April 21, 1998. Building 1398 is the only structure still standing. A small concrete pad is located approximately at the center of the west boundary. To the southeast of that pad is a larger concrete pad, and a few feet farther south, is an oblong concrete slab. The area adjacent to and behind (east) these structures is soggy and covered with large grasses. Parallel to the east boundary is a wooded marshy area and a small stream flowing north. The north end of the parcel is paved and bounded to the north by trees. The paved area extends beyond (to the south) Building 1398 for approximately 40 feet. A potential underground tank location is noted in the environmental baseline survey (EBS)



20 MAY 98 16:27:47	STARTING DATE: 04/08/98	DATE LAST REV.:	DRAFT. CHCK. BY:	INITIATOR: C. SHORT	DWG. NO.: ...774645es.060
	DRAWN BY: D. BILLINGSLEY	DRAWN BY:	ENGR. CHCK. BY: A. MAYILA	PROJ. MGR.: J. YACOBUB	PROJ. NO.: 774645



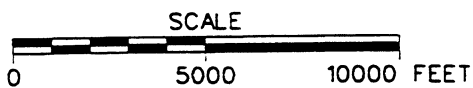
#### LEGEND:



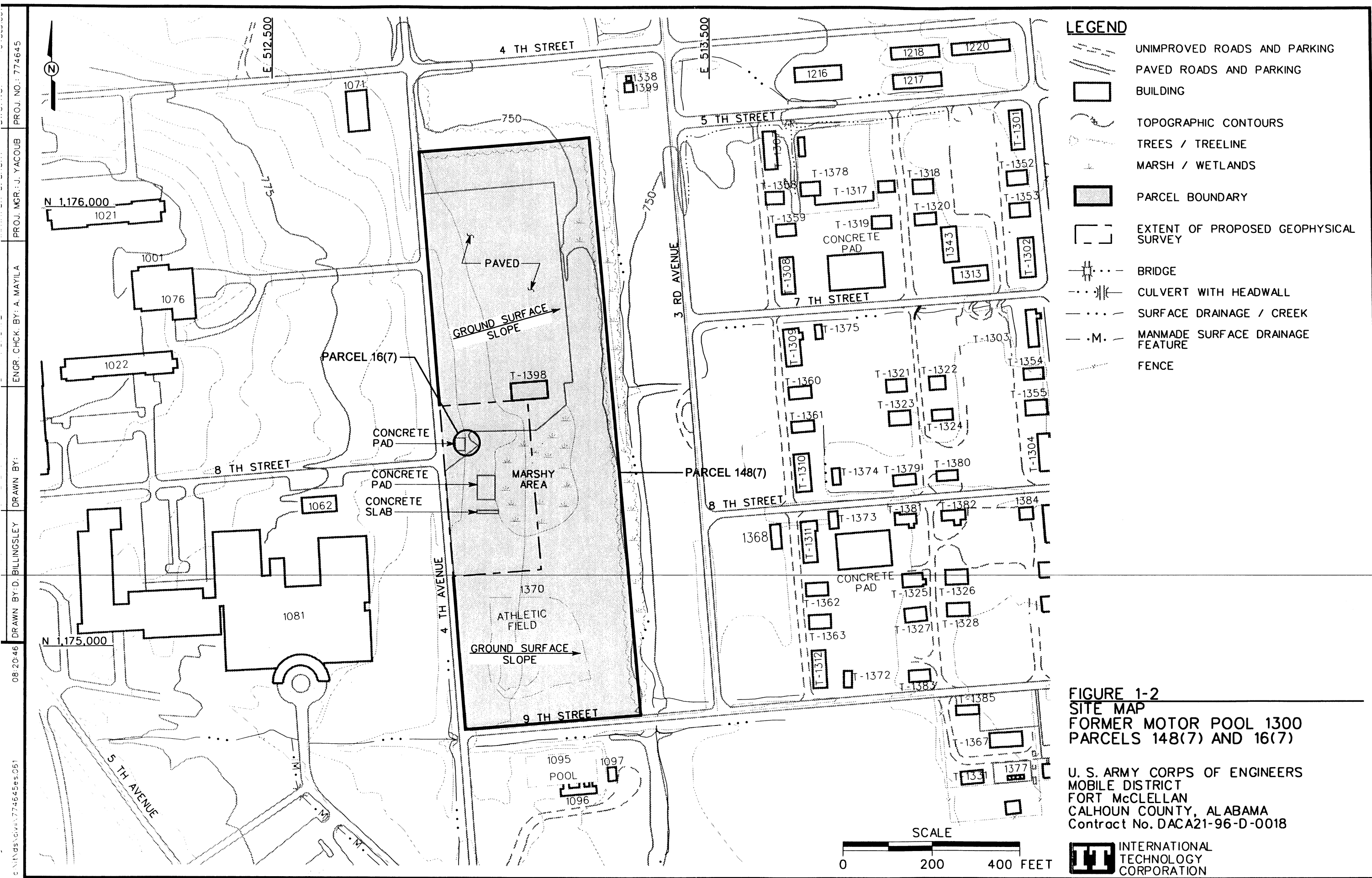
FORT McCLELLAN BOUNDARY

#### FIGURE 1-1 SITE LOCATION MAP FORMER MOTOR POOL 1300 PARCEL 148(7)

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018



INTERNATIONAL  
TECHNOLOGY  
CORPORATION



(Environmental Sciences and Engineering, Inc. [ESE], 1998) as Parcel 16(7). This potential tank is approximately at the center of the west boundary near the road and near the small concrete pad. Information is not available to confirm that the original tanks have been removed, and it is unknown if they are removed or are still in place. The small concrete pad is evidence of a former gas station constructed in 1941. The building was a 9 by 21-foot cement foundation with corrugated steel walls. The original plans called for two 10,000-gallon tanks (FTMC, 1941). None of these buildings currently exist and the status of the underground storage tanks (UST) is, for the most part, unevaluated. The USTs are reported to be located in front of the building. Closure reports are not on file at FTMC or the Alabama Department of Environmental Management (ADEM) and may not have been required at the time of closure. Two 5,000-gallon tanks are reported to have been removed in 1991, but closure reports are not on file. It is unknown if two 5,000-gallon tanks were installed rather than two 10,000-gallon tanks. Therefore, it is unknown if two 10,000-gallon tanks remain at the site. Evidence of the tanks was not seen during the site walkover. The south end of the parcel is grassy and has been used as a softball/baseball field. The elevation of the site is approximately 760 feet. The surface of the land slopes to the east and south.

Two soil series are present at this parcel site: the Pope Series and the Rarden Series. The soils that parallel the east boundary at Parcel 148(7) are classified in the Pope Series. These soils consist of deep, well drained, strongly to very strongly acid soils on first bottoms. They are developing in general alluvium that has washed from soils underlain by sandstone and shale. In many places the alluvium is made up of materials that have washed from soils underlain by limestone. The surface soil is dark-brown to dark grayish brown fine sandy loam to silt loam (0 to 29 inches from the surface). The subsoil (29 to 40 inches from the surface) is dark-brown fine sandy loam or silt loam (U.S. Department of Agriculture, 1961).

The specific category for Parcel 148(7) at the east boundary is Pope fine sandy loam, 0 to 2 percent slopes (PoA). The surface layer ranges from very dark grayish brown to dark brown. The subsoil ranges from yellowish brown to dark brown and from fine sandy loam to light silty clay loam in texture. Small mica flakes are noticeable in some areas. Thickness ranges from 34 inches to 10 or 12 feet. Runoff is slow, permeability is moderate, and infiltration is medium to high. The capacity for holding available moisture is high, but flooding is a hazard. Depth to water is 2 to 3 feet and depth to bedrock is greater than 8 feet.

The soils on the western two-thirds of the site are classified in the Rarden series. These soils consist of moderately well drained, strongly acid to very strongly acid soils. They generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with strong brown. Concretions and fragments of sandstone, up to one-half inch in diameter are commonly on and in the soil.

The specific soil category for the western two-thirds portion of Parcel 148(7) is Rarden silty clay loam, shallow, 2-6 percent slopes, severely eroded (ReB3). This type of Rarden soil has mild slopes, high erosion and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0 to 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow and capacity for available moisture is low. Depth to water is greater than 20 feet. Depth to bedrock is between 1.5 and 4.0 feet.

### ***1.3 Scope of Work***

The scope of work for activities associated with the Former Motor Pool Area 1300, as specified in the statement of work (USACE, 1998), include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 12 surface soil, 10 subsurface soil, 2 surface water, 2 sediment, 8 groundwater, and 1 depositional soil sample to define the nature and extent of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current U.S. Environmental Protection Agency (EPA) Region IV and ADEM requirements.

## ***2.0 Summary of Existing Environmental Studies***

---

An EBS was conducted by ESE (1998) to document current environmental conditions of all FTMC property. The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action under way.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed of all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Former Motor Pool Area 1300, Parcel 148(7) site was classified as Category 7: Areas that are not evaluated or require further evaluation. Previous studies to document site environmental conditions have not been conducted.

## **3.0 Site-Specific Data Quality Objectives**

---

### **3.1 Overview**

The data quality objective (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Motor Pool Area 1300 site. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Former Motor Pool Area 1300 is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, and procedures necessary to meet the objectives of the SI and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the SI at the Former Motor Pool Area 1300 site, presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual potential site-specific chemicals (PSSC) in the site media.

Table 3-1

**Summary of Data Quality Objectives**  
**Former Motor Pool Area 1300, Parcels 148(7) and 16(7)**  
**Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other contractors Possible future land users	None	<u>Contaminant Source:</u> Petroleum products	Surface Soils Subsurface Soils	SI to confirm whether potential site-specific chemicals are present in the site media.	<u>Surface Soils:</u> TCL VOCs TAL Metals	Definitive + CESAS Level B data packages	14 direct-push locations + QC
		<u>Migration Pathways:</u> Infiltration to subsurface soil Infiltration and leaching to groundwater Discharge of groundwater to the surface Erosion and runoff to surfaces of Cane Creek Dust emissions and volatilization from soil and surface water to ambient air	Groundwater Surface Water Sediments Depositional Soil		<u>Subsurface Soil:</u> TCL VOCs TCL SVOCs TAL Metals	Definitive + CESAS Level B data packages	10 direct-push locations + QC
				Definitive quality data for future decision making.	<u>Groundwater:</u> TCL VOCs TCL SVOCs TAL Metals	Definitive + CESAS Level B data packages	10 direct-push locations + QC
		<u>Potential Receptors:</u> Groundskeeper Construction worker Resident Recreational site user			<u>Surface Water:</u> TCL VOCs TCL SVOCs TAL Metals	Definitive + CESAS Level B data packages	2 + QC
		<u>PSSCs:</u> VOCs, SVOCs, metals			<u>Sediments:</u> TCL VOCs TCL SVOCs TAL Metals TOC Grain Size	Definitive + CESAS Level B data packages	2 + QC
					<u>Depositional Soil:</u> TCL VOCs TCL SVOCs TAL Metals	Definitive + CESAS Level B data packages	1 + QC

ADEM - Alabama Department of Environmental Management.  
 CESAS - Corps of Engineers South Atlantic Savannah.  
 DOD - U.S. Department of Defense.  
 EPA - U.S. Environmental Protection Agency.  
 FTMC - Fort McClellan.  
 PSSC - Potential site-specific chemical.  
 QC - Quality control.

SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 TCL - Target compound list.  
 TOC - Total organic carbon.  
 USACE - U.S. Army Corps of Engineers.  
 VOC - Volatile organic compound.

### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Parcel 148(7) is due to the use of this area as the Former Motor Pool Area 1300. Light vehicle maintenance was performed here; however, the area was primarily used for vehicle storage. Although no evidence of a washrack, oil/water separator, or UST was seen during the site walkover, CERFA parcel descriptions indicate these structures were located at the site. It is assumed that releases of any potential contaminants were restricted to surface soil and subsurface soil (leakage from the underground tank). Potential contaminant transport pathways include infiltration to subsurface soil, infiltration and leaching to groundwater, discharge of groundwater to the surface, erosion and runoff to the surface water and sediment in Cane Creek, and dust emissions and volatilization from soil and surface water to ambient air.

Current site use is best described as open land with no public access. The athletic field appeared to have fallen into disuse (no fence, no mowing, no infield). Open land with no public access means it is on Post and is limited to Post use. Basic maintenance is applied to the site and, therefore, plausible receptors under current site use are limited to the groundskeeper.

Future plans call for the site remaining as open space, serving as a buffer between the surrounding developed areas (FTMC, 1997) and protecting the wetland regions within the site.



The area will not offer public access but basic maintenance to the site will be applied. Therefore, the groundskeeper is the most plausible receptor under the future site-use scenario. The future residential, construction worker, and recreational site user receptor scenarios are also considered for purposes of conservatism.

The contaminant release and transport mechanisms, source and exposure media, receptors, and pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the habitat-specific screening ecological risk assessment work plan.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the SI at the Former Motor Pool Area 1300, Parcel 148(7) site. Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

Confirmation of the presence or absence of contamination at the Former Motor Pool Area 1300 site will be based upon a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. This definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a feasibility study and risk assessment.

#### ***3.4.2 Data Types and Quality***

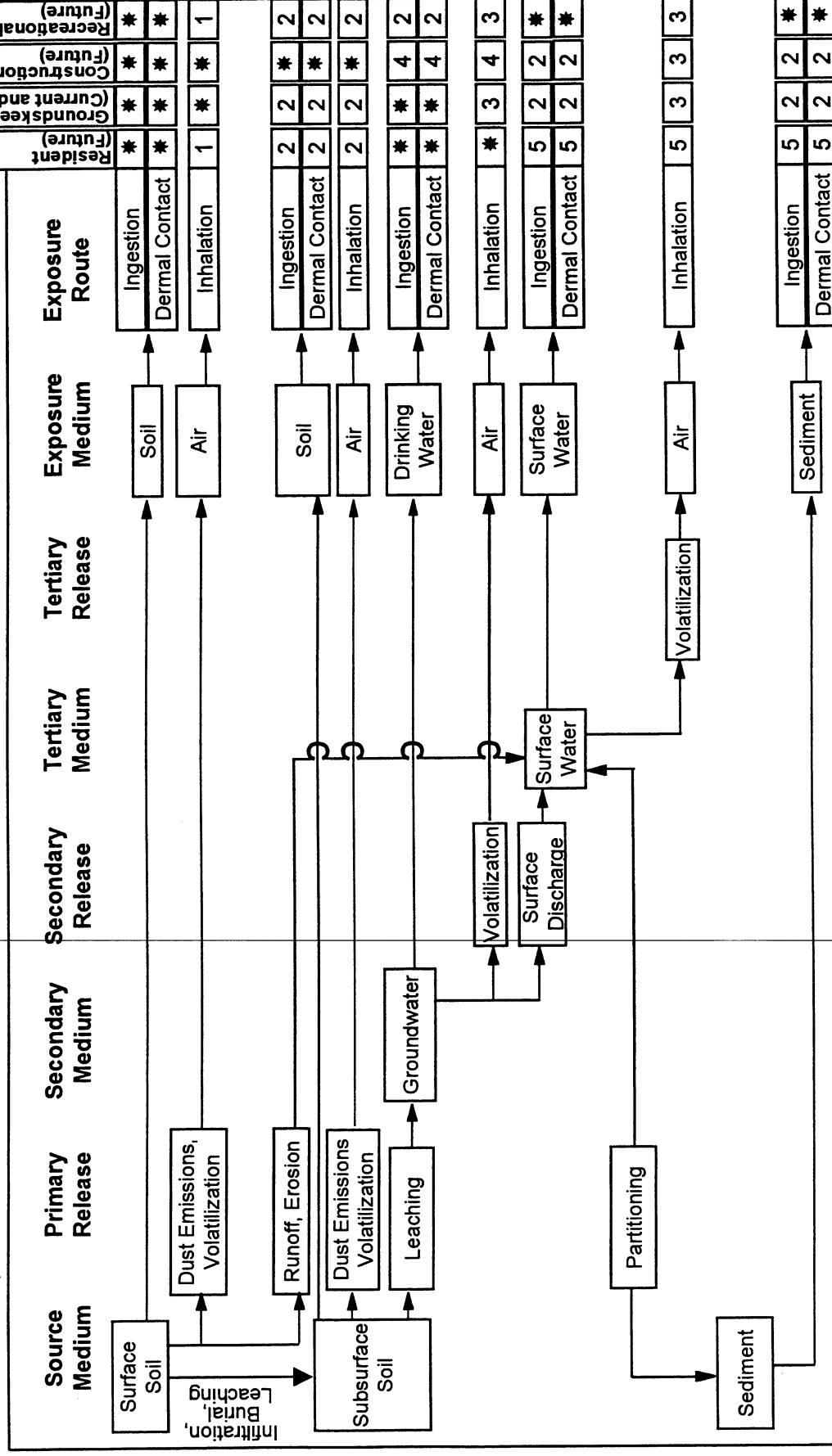
Surface and subsurface soil, depositional soil, sediment, surface water, and groundwater will be sampled and analyzed in order to meet the objectives of the SI at the Former Motor Pool Area 1300, Parcel 148(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

Figure 3-1

# Human Health Conceptual Site Exposure Model for Motor Pool Area 1300

Parcels 148(7) and 16(7)

Ft. McClellan, Alabama



\* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

## **4.0 Field Activities**

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### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where samples will be collected, using the procedure specified in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes and will coordinate with the installation to clear the proposed locations for utilities and to obtain dig permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Surface Geophysical Survey**

A geophysical survey is planned for Parcel 16(7), which is located on Parcel 148(7). Two 5,000-gallon USTs (one mogas and one diesel) were removed in 1991. Closure reports are not on file, and possibility of a historical release does exist. The exact locations of the USTs were not evident during the site walkover, although reference data indicate that the tanks were located in front of the building (the foundation pad still exists). Information was not available to confirm that the 5,000-gallon USTs are the tanks originally installed instead of the 10,000-gallon tanks.

Geophysical survey techniques offer the best approach to locating and mapping potential USTs or their previous locations and any associated underground piping. Based on available site information, the geophysical survey will include data acquisition using the G-858G magnetic gradiometer, EM31, and EM16. Inclusion of an EM34-3XL survey will only be considered at sites which the UST depth of burial could exceed 10 feet. If the magnetic or electromagnetic (EM) data indicate anomalies potentially caused by tanks, ground-penetrating radar (GPR) will be used to further characterize the source object(s). GPR will also be used in portions of the site where the response from surface features (e.g., structures, reinforced concrete pads, metal fences) and/or subsurface features, such as corridors, would likely obscure the magnetic and/or EM response from a tank.

#### **4.2.1 Methodology and Instrumentation**

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation,

and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the installation-wide SAP and the following IT standard operating procedures (SOP) for geophysical investigations:

- ITGP-001: Surface Magnetic Surveys
- ITGP-002: Surface Frequency-Domain EM Surveys
- ITGP-003: GPR Surveys
- ITGP-004: Surface Time-Domain EM Surveys
- ITGP-005: Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely locations of the target USTs.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

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Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pin flags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM induction and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. GPR will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at Parcel 16(7) will be incorporated into the SI report. The geophysical results will indicate any anomalies that are present, and sampling locations may be moved according to the anomalies found.

#### **4.2.2 Areal Coverage**

Parcel 16(7) geophysical surveys will encompass an area of approximately 200 by 390 feet. The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizontal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.
- EM61 survey data will be collected at approximate 2-foot intervals along N-S and E-W oriented survey lines spaced 10 feet apart.

- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with surveyor's paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized.

#### ***4.2.3 Underground Storage Tank Exploratory Test Pits***

Upon completion of the geophysical survey at each site, the data will be reviewed for possible anomalies indicative of USTs. Anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations for USTs will be labeled as potential USTs.

At each anomaly labeled as a potential UST, an exploratory test pit will be excavated to determine if the feature or anomaly detected either is or is not a UST. These UST exploratory test pits will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location and observations will be recorded in the field log.

If some type of material other than a UST is found, the type of material and location will be noted in the field log and the material will be placed back in the excavation. The location will be marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label "potential UST" will be removed from the location of the geophysical anomaly.

### **4.3 Environmental Sampling**

The environmental sampling to be performed at the Former Motor Pool Area 1300, Parcel 148(7), will include the collection of surface and subsurface soil, sediment, depositional soil, surface water and groundwater samples for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walkover, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media, location descriptions, and rationale are shown in Table 4-1. Some sample locations are subject to change pending the results of the geophysical survey.

#### **4.3.1 Surface Soil Sampling**

Surface soil samples will be collected from 12 of the 14 soil borings proposed at the Former Motor Pool Area 1300.

##### **4.3.1.1 Sample Locations and Rationale**

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.3.1.2 Sample Collection**

Surface soil samples will be collected from the upper 1-foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

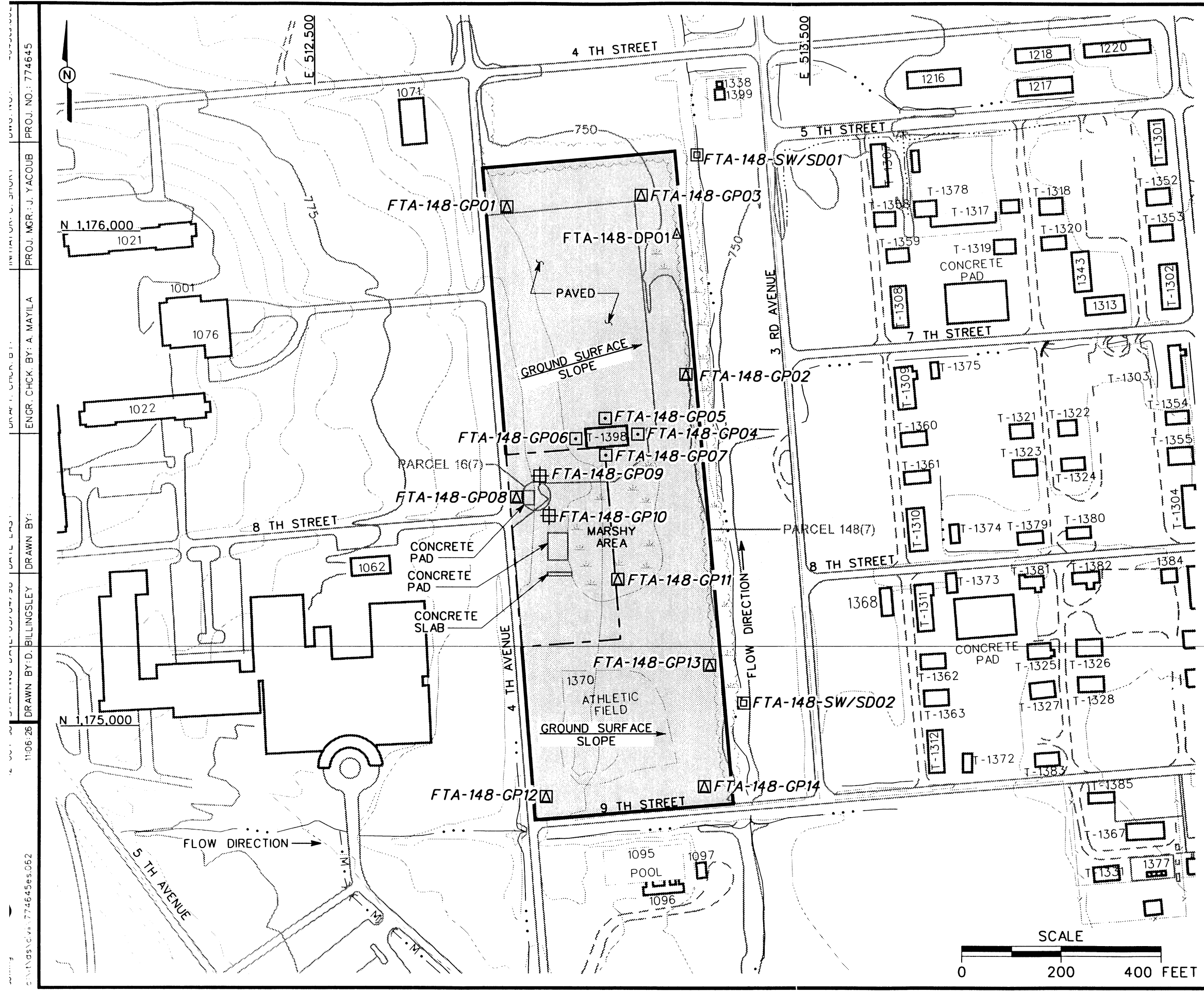
#### **4.3.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from 10 of the 14 soil borings described in Section 4.3.1.

##### **4.3.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the 10 soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations,





- LEGEND**
- UNIMPROVED ROADS AND PARKING
  - PAVED ROADS AND PARKING
  - BUILDING
  - TOPOGRAPHIC CONTOURS
  - TREES / TREELINE
  - MARSH / WETLANDS
  - PARCEL BOUNDARY
  - EXTENT OF PROPOSED GEOPHYSICAL SURVEY
  - BRIDGE
  - CULVERT WITH HEADWALL
  - SURFACE DRAINAGE / CREEK
  - MANMADE SURFACE DRAINAGE FEATURE
  - FENCE
  - PROPOSED SURFACE WATER/SEDIMENT SAMPLE
  - PROPOSED SURFACE SOIL SAMPLE
  - PROPOSED SUBSURFACE SOIL SAMPLE
  - PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE
  - PROPOSED DEPOSITIONAL SOIL SAMPLE

**FIGURE 4-1**  
**PROPOSED SAMPLING LOCATIONS**  
**FORMER MOTOR POOL 1300**  
**PARCELS 148(7) AND 16(7)**

U. S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018



PROJ. NO.: 774645  
 PROJ. MGR.: J. YACOB  
 ENGR. CHCK. BY: A. MAYILA  
 DRAWN BY: D. BILLINGSLEY  
 11-06-26  
 774645es.062

**Table 4-1**

**Site Sampling Rationale**  
**Former Motor Pool Area 1300, Parcels 148(7) and 16(7)**  
**Ft. McClellan, Calhoun County, Alabama**

Sample Designation	Media Sampled	Rationale and Location
FTA-148-GP01	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected NW (downgradient) of site to determine if PSSCs are present.
FTA-148-GP02	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected from eastern side (downgradient) to determine if PSSCs are present.
FTA-148-GP03	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected NE (downgradient) of site to determine if PSSCs are present.
FTA-148-GP04	Surface Soil	Soil will be collected east of Building 1398 to determine if PSSCs are present.
FTA-148-GP05	Surface Soil	Soil will be collected north (downgradient) of Building 1398 to determine if PSSCs are present.
FTA-148-GP06	Surface Soil	Soil will be collected west of Building 1398 to determine if PSSCs are present.
FTA-148-GP07	Surface Soil	Soil will be collected south (upgradient) of Building 1398 to determine if PSSCs are present.
FTA-148-GP08	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected upgradient and west of potential former tank 16(7) to determine if PSSCs are present.
FTA-148-GP09	Subsurface Soil	Subsurface soil will be collected at depth immediately below UST.
FTA-148-GP10	Subsurface Soil	Subsurface soil will be collected at depth immediately below UST.
FTA-148-GP11	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected at this location for coverage of the site to determine if PSSCs are present.
FTA-148-GP12	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected at this location for coverage of the site to determine if PSSCs are present.
FTA-148-GP13	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected from eastern side of the site to determine if PSSCs are present.
FTA-148-GP14	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected at this location for coverage of the site to determine if PSSCs are present.
FTA-148-SW/SD01	Surface Water, Sediment	Surface water and sediment will be collected in stream downgradient (north) at north end of Parcel 148 (7) to determine if PSSCs are being transported beyond and downgradient of the site. Sample location is a potential down-gradient sink for contaminants from the site. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.
FTA-148-SW/SD02	Surface Water, Sediment	Surface water and sediment will be collected in stream upgradient (south) at south end of Parcel 148(7), to determine if PSSCs are being transported beyond and downgradient of the site.
FTA-148-DEP01	Depositional Soil	Depositional soil will be collected at the most likely point of exit from the site for surface water runoff. Evidence of contaminant mobility at any point within the site would likely be integrated at this location. This site is located near the northeast corner at the parcel boundary.

PSSC - Potential chemicals of concern.

Table 4-2

**Surface and Subsurface Soil, Sediment, and Depositional Soil Sample Designations and QA/QC Sample Quantities**  
**Former Motor Pool Area 1300, Parcels 148(7) and 16(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-148-GP01	FTA-148-GP01-SS-DB0001-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP02	FTA-148-GP01-DS-DB0002-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP03	FTA-148-GP02-SS-DB0003-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP04	FTA-148-GP02-DS-DB0004-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP05	FTA-148-GP03-SS-DB0005-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP06	FTA-148-GP03-DS-DB0006-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP07	FTA-148-GP04-SS-DB0007-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP08	FTA-148-GP05-SS-DB0008-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP09	FTA-148-GP06-SS-DB0009-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP10	FTA-148-GP07-SS-DB0010-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP11	FTA-148-GP08-SS-DB0011-REG	0-1.0 <sup>b</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP12	FTA-148-GP08-DS-DB0012-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP13	FTA-148-GP09-DS-DB0013-REG	0-1.0 <sup>b</sup>			FTA-148-GP09-DS-DB0013-MS FTA-148-GP09-DS-DB0013-MSD	TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP14	FTA-148-GP10-DS-DB0014-REG	0-1.0 <sup>b</sup>	FTA-148-GP10-SS-DB0015-FD	FTA-148-GP10-SS-DB0016-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP15	FTA-148-GP11-SS-DB0017-REG	0-1.0 <sup>a</sup>	FTA-148-GP11-SS-DB0018-FD	FTA-148-GP11-SS-DB0019-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP16	FTA-148-GP11-DS-DB0020-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP17	FTA-148-GP12-SS-DB0021-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP18	FTA-148-GP12-DS-DB0022-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP19	FTA-148-GP13-SS-DB0023-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP20	FTA-148-GP13-DS-DB0024-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP21	FTA-148-GP14-SS-DB0025-REG	0-1.0 <sup>a</sup>				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP22	FTA-148-GP14-DS-DB0026-REG					TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-GP23	FTA-148-DEP01-DEP-DB0027-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals
FTA-148-SWSD01	FTA-148-SWSD01-SD-DB1001-REG	NA	FTA-148-SWSD01-SD-DB1002-FD	FTA-148-SWSD01-SD-DB1003-FS		TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-148-SWSD02	FTA-148-SWSD02-SD-DB1004-REG	NA				TCL VOCs, TCL SVOCs, TAL Metals

<sup>a</sup> Actual sample depth will be at the discretion of the site geologists and will be based on field observations.

<sup>b</sup> Sample depth will be immediately below the estimated depth of the bottom of the UST.

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

VOC - Volatile organic compound

SVOC - Semivolatile organic compound.

TCL - Target compound list

TAL - Target analyte list.

TOC - Total Organic Carbon

depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the geophysical survey.

#### **4.3.2.2 Sample Collection**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously from 1 foot bgs to 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.5 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated readings (above background) on the PID, the deepest interval will be submitted to the laboratory for analysis.

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Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSCs and/or additional sample data would provide insight for determining the existence of any PSSCs. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

Three borings will be installed next to existing USTs. The subsurface soil samples will be collected immediately below the bottom of the UST. However, if other soil sample intervals appear to contain higher levels of PSSCs, then samples will be selected at the higher concentration depth interval or in addition to the original proposed depth interval. Actual

selection of the subsurface soil sample interval to be submitted for analysis will depend on the observations by the field geologist.

### ***4.3.3 Direct-Push Groundwater Sampling***

Groundwater samples will be collected from direct-push temporary wells installed at the site. Temporary wells will be installed in eight of the borings described in Section 4.3.2 to collect groundwater samples.

#### ***4.3.3.1 Sample Locations and Rationale***

Ten groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the temporary well locations shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the geophysical survey.

#### ***4.3.3.2 Sample Collection***

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.7.1.1 and 4.9.1.4 of the SAP. The temporary well at each location will be completed at the water table surface (at a depth where sufficient water is encountered) to collect a groundwater sample.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

### ***4.3.4 Surface Water Sampling***

Two surface water samples will be collected from the small creek near the east boundary of the site and along the drainage features west and north of the parcel.

#### ***4.3.4.1 Sample Locations and Rationale***

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities  
Former Motor Pool Area 1300, Parcels 148(7) and 16(7)  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-148-GP01	FTA-148-GP01-GW-DB3001-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP02	FTA-148-GP02-GW-DB3002-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP03	FTA-148-GP03-GW-DB3003-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP08	FTA-148-GP08-GW-DB3004-REG	a			FTA-148-GP08-GW-DC3004-MS FTA-148-GP08-GW-DC3004-MSD	TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP11	FTA-148-GP11-GW-DB3005-REG	a	FTA-148-GP11-GW-DB3006-FD	FTA-148-GP11-GW-DB3007-FS		TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP12	FTA-148-GP12-GW-DB3008-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP13	FTA-148-GP13-GW-DB3009-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-GP14	FTA-148-GP14-GW-DB3010-REG	a				TCL VOCs, TCL SVOCs, Total TAL Metals

\*Actual groundwater sample depth will depend on where first water is encountered to sufficiently collect a sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic compound.

VOC - Volatile organic compound.

required QA/QC sample quantities are listed in Table 4-4. The exact sampling locations will be determined in the field based on drainage pathways and actual field observations.

#### **4.3.4.2 Sample Collection**

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

#### **4.3.5 Sediment Sampling**

Two sediment samples will be collected at the same locations as the two surface water samples presented in Section 4.3.4.

##### **4.3.5.1 Sample Locations and Rationale**

The tentative locations for the two sediment samples to be collected are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample quantities are listed in Table 4-2. The actual sediment sample points selected will be based on the drainage pathways and actual field observations.

##### **4.3.5.2 Sample Collection**

Sediment sample will be collected in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

#### **4.3.6 Depositional Soil Sampling**

One depositional soil sample will be collected near the northeast corner of the parcel.

##### **4.3.6.1 Sample Locations and Rationale**

The depositional soil sample will be collected in the drainage pathway at the northeast corner of the parcel. The sampling rationale is listed in Table 4-1. The proposed tentative sampling locations are shown in Figure 4-1. The depositional soil sample designation and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point selected will be based on the drainage pathways and on actual field observations.

Table 4-4

Surface Water Sample Designations and QA/QC Sample Quantities  
Former Motor Pool Area 1300, Parcels 148(7) and 16(7)  
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-148-SW/SD01	FTA-148-SW/SD01-SW-DB2001-REG	NA				TCL VOCs, TCL SVOCs, Total TAL Metals
FTA-148-SW/SD02	FTA-148-SW/SD02-SW-DB2002-REG	NA				TCL VOCs, TCL SVOCs, Total TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.



#### **4.3.6.2 Sample Collection**

The depositional soil sample will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

#### **4.4 Decontamination Requirements**

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

#### **4.5 Surveying of Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either GPS or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

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Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Temporary wells will be surveyed to an accuracy of 0.1 feet for horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.01 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.2.5 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### **4.6 Analytical Program**

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for

specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Motor Pool Area 1300 site consist of the following analytical suite:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000 (Total TAL metals for water)

In addition, the sediment sample will be analyzed for the following list of parameters:

- Target Organic Compound - Method 9060
- Grain Size - American Society for Testing and Materials D-421/D422

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP).

Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

The field sampling coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

---

#### ***4.7 Sample Preservation, Packaging, and Shipping***

Sample preservation, packaging, and shipping will follow the procedures specified in Section 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving  
Quanterra Environmental Services  
5815 Middle Brook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401

Table 4-5

**Analytical Samples**  
**Former Motor Pool Area 1300, Parcels 148(7) and 16(7)**  
**Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples *					Quanterra	QA Lab		
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis		
Parcel 148(7) Former Motor Pool Area 1300: 8 groundwater, 2 surface water, 10 subsurface soil, 2 sediment, 1 depositional soil															
TCL VOCs	8260B	water	normal	10	1	10	1	1	1	3	1	17	1		
TCL SVOCs	8270C	water	normal	10	1	10	1	1	1	1	1	14	1		
CI Pesticides	8081A	water	normal	10	1	10	1	1	1	1	1	14	1		
PCBs	8082	water	normal	10	1	10	1	1	1	1	1	14	1		
OP Pesticides	8141A	water	normal	10	1	10	1	1	1	1	1	14	1		
CI Herbicides	8151A	water	normal	10	1	10	1	1	1	1	1	14	1		
Tot. TAL Metals	6010B/7000	water	normal	10	1	10	1	1	1	1	1	14	1		
TCL VOCs	8260B	soil	normal	25	1	25	3	1	1	1	1	31	1		
TCL SVOCs	8270C	soil	normal	25	1	25	3	1	1	1	1	31	1		
CI Pesticides	8081A	soil	normal	25	1	25	3	1	1	1	1	31	1		
PCBs	8082	soil	normal	25	1	25	3	1	1	1	1	31	1		
OP Pesticides	8141A	soil	normal	25	1	25	3	1	1	1	1	31	1		
CI Herbicides	8151A	soil	normal	25	1	25	3	1	1	1	1	31	1		
TAL Metals	6010B/7000	soil	normal	25	1	25	3	1	1	1	1	31	1		
TOC	9060	Sediment	normal	2	1	2								2	0
Grain Size	ASTM D-421/D-422	Sediment	normal	2	1	2								2	0
Former Motor Pool Area 1300 Subtotal:							28	14	14	3	14	322	14		

<sup>a</sup>Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded up to the nearest whole number. .  
 Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed 4 field samples per day to estimate trip blanks.  
 Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week.  
 Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

## Ship samples to:

Quanterra Environmental Services  
 5815 Middlebrook Pike  
 Knoxville, Tennessee 37921  
 Attn: John Reynolds  
 Tel: 423-588-6401  
 Fax: 423-584-4315

USACE Laboratory split samples  
 are shipped to:

USACE South Atlantic Division Laboratory  
 Attn: Sample Receiving  
 611 South Cobb Drive  
 Marietta, Georgia 30060-3112  
 Tel: 707-919-5270

QA/QC - Quality assurance/quality control.  
 MS/MSD - Matrix spike/matrix spike duplicate.  
 SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.

INFORM THE AGENCY OF ENVIRONMENT

USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Telephone: (770) 919-5270

#### ***4.8 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived waste (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Motor Pool Area 1300, Parcel 148(7) site will include decontamination fluids and possibly disposable personal protective equipment. IDW will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

## 6.0 References

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Environmental Science and Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998, *UST Summary Report*, June.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

IT Corporation (IT), 1998b, *Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama*, August.

U.S. Army Corps of Engineers (USACE), 1998, *Statement of Work for Task Order CK005, Site Investigations at Fort McClellan, Alabama*, January.

U.S. Army Corps of Engineers (USACE), 1997, *Final Archives Search Report Conclusions and Recommendations, Fort McClellan, Anniston, Alabama*, U.S. Department of Defense Base Alignment and Closure Ordnance, Ammunition and Explosives, St. Louis District.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No. 9, September.

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**Final  
Site-Specific Field Sampling Plan Attachment  
Site Investigation at the  
Former Motor Pool Area 600,  
Parcels 149(7) and 136(7)  
Fort McClellan  
Calhoun County, Alabama**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street,  
Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

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**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**October 1998**

**Revision 1**

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## ***List of Acronyms***

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ADEM	Alabama Department of Environmental Management
ASR	archives search report
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
COPC	chemical of potential concern
CSEM	conceptual site exposure model
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPS	ground positioning system
IT	IT Corporation
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TCL	target compound list
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
WMP	waste management plan
WP	installation-wide work plan

## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) to determine the presence or absence of potential site-specific chemicals (PSSC). This site-specific field sampling (SFSP) will provide technical guidance for sampling activities at the Former Motor Pool Area 600, Parcels 149(7) and Parcel 136(7).

IT will collect samples for volatile organic compounds, semivolatile compounds, and metals. Specifically, IT will collect 11 surface soil samples, 13 subsurface soil samples, 1 surface water sample, 1 sediment sample, 7 groundwater samples, and 1 depositional soil sample. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for the Former Motor Pool Area 600, Parcels 149(7) and 136(7) at Fort McClellan (FTMC), Calhoun County, Alabama, will be used in conjunction with the site-specific safety and health plan (SSHP) and the WP (IT, 1998b), the waste management plan and the sampling and analysis plan (SAP). The SAP includes the installation-wide safety and health plan, quality assurance plan, waste management plan, site-specific hazard analyses are included in the SSHP.

---

The Former Motor Pool Area 600, Parcel 149(7) currently houses the Wildlife Management Office and the offices of Roads and Grounds operations. Scrap metal and old golf carts are stored there. It is believed that motor vehicle maintenance was conducted at this site in the past; however this activity is not currently being conducted in the area. Site investigation activities will be conducted to determine the presence or absence of potential contaminants at the site.

## ***1.0 Project Description***

---

### ***1.1 Introduction***

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Motor Pool Area 600, Parcels 149(7) and 136(7) under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Motor Pool Area 600, Parcels 149(7) and 136(7) site, and the installation-wide work plan (WP) (IT, 1998b) and the SAP. The SAP includes the installation-wide safety and health plan (SHP), the waste management plan and quality assurance plan (QAP).

### ***1.2 Site Description***

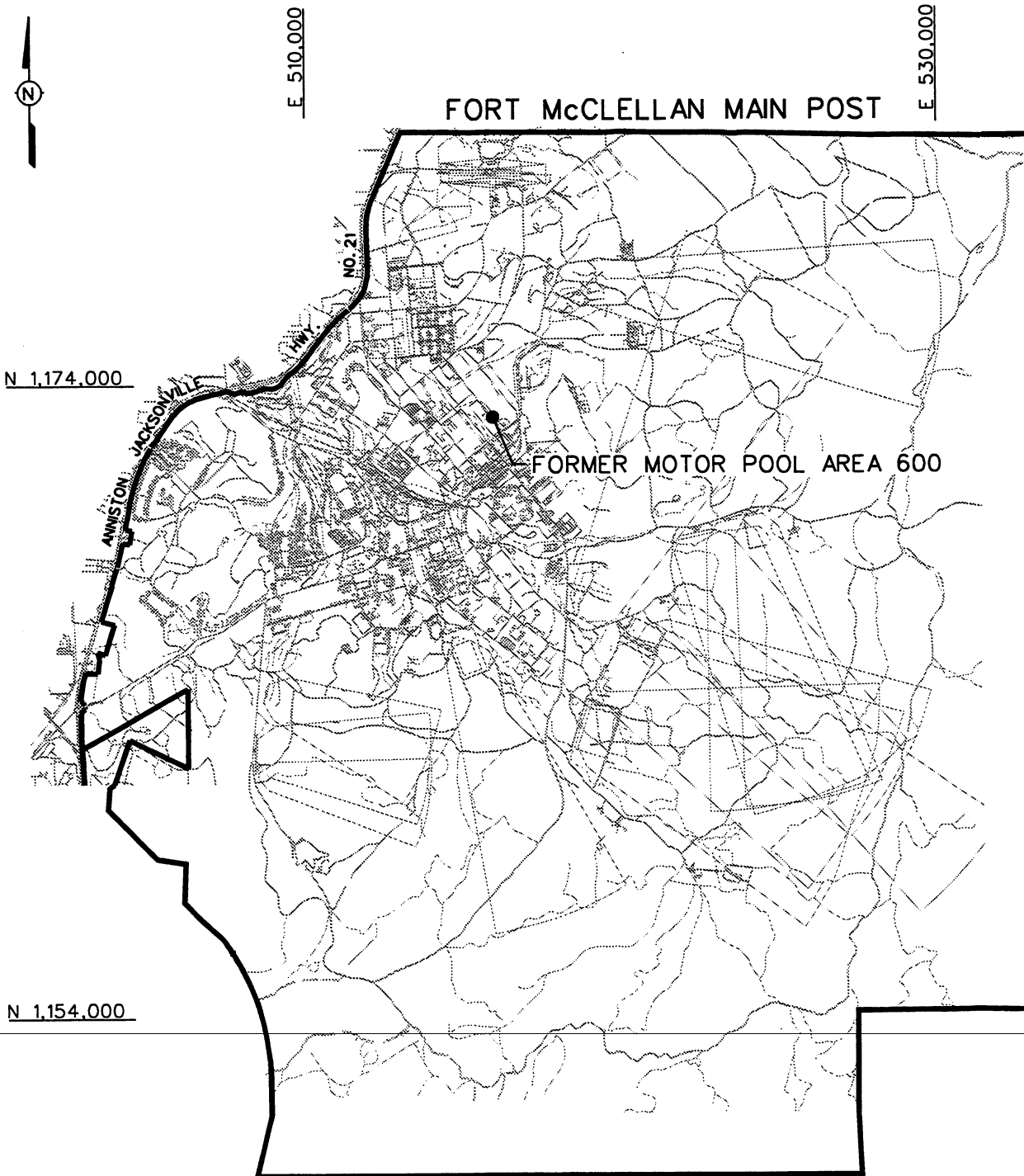
Former Motor Pool Area 600, Parcel 149(7) is an 8-acre rectangular parcel oriented northwest-southeast on 18th Street, across from Building 350, the Consolidated Maintenance Facility. Currently, the Wildlife Management Office and the offices of Roads and Grounds operations are located in Buildings 698 and 699 (Figure 1-2). Scrap metal and old golf carts are stored on-site. It is believed that motor vehicle maintenance was conducted at this site in the past; however, this activity is not currently being conducted in this area. A records search has identified the possibility that one underground storage tank (UST) may be present in this area. The EBS parcel description states that vehicle maintenance, a wash rack, and an oil/water separator are the basis of the SI at the site. This area is completely surrounded by a chain-link fence.

A site walkover revealed evidence of drums ( drum saddle and lids) at the west boundary approximately two-thirds distance from the front gate on 18th Street. Evidence of excavation, either to install or to replace underground lines, extending from the rear of Building 698, was also noted. Evidence of excavation extended from the building to the area where evidence of drums was seen (northwest and west) and to the rear of the adjacent Building 699. The entire area is


09 OCT 98 15:12:13	STARTING DATE: 05/13/98	DATE LAST REV.:	DRAFT. CHCK. BY:	INITIATOR: C. SHORT	DWG. NO.: ...774645es.057
	DRAWN BY: D. BILLINGSLEY	DRAWN BY:	ENGR. CHCK. BY: A. MAYILA	PROJ. MGR.: J. YACOB	PROJ. NO.: 774645

dbilling

c:\ntds\civil\774645es.057



# **LEGEND:**

 FORT McCLELLAN BOUNDARY

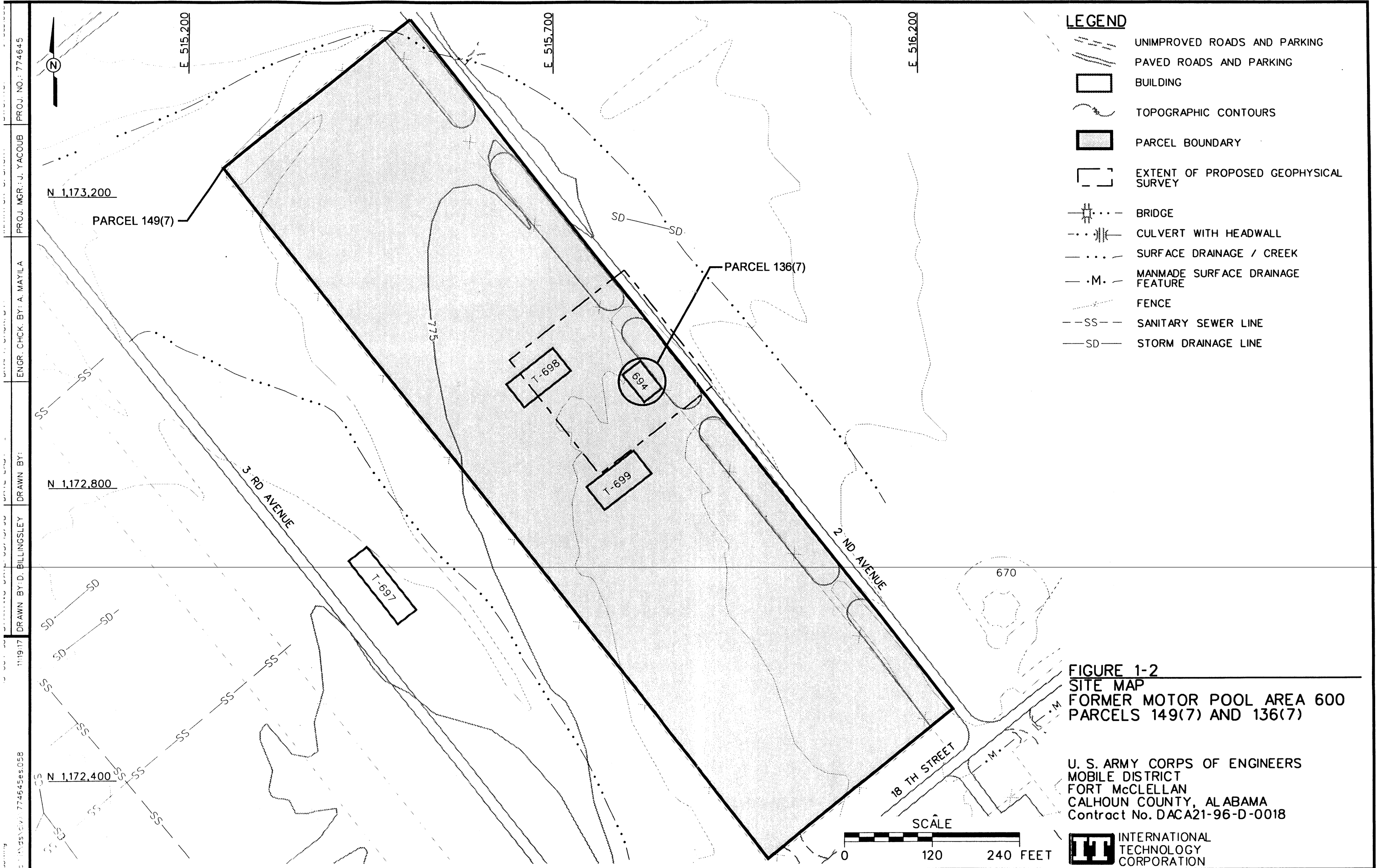
SCALE  
0 5000 10000 FEET

## **FIGURE 1-1**

**SITE LOCATION MAP  
FORMER MOTOR POOL AREA 600  
PARCELS 149(7) AND 136(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

 INTERNATIONAL  
TECHNOLOGY  
CORPORATION



paved, and gently slopes to the west and northwest. The elevation of the site is approximately 820 feet.

To the west of the western boundary is a small stream flowing north-northwest, approximately 2.5 miles, to the Weaver Cave area where it disappears. A small tributary is located east of the parcel flowing northwest and west where it joins the previously mentioned stream to the north of the parcel.

Parcel 136(7) is a former gas station at former Building 694, which is a location approximately midway of the east parcel boundary. It was one of the standard post gas stations constructed in 1941 with a concrete foundation (9 by 21 feet) and corrugated steel walls. The building has been removed and the foundation is no longer there, but what appears to be an old pump island is still visible. Two fuel pumps are reported to be located on the island directly in front of the building, approximately 20 feet away. The USTs for this gas station are reported to be in front of the building. Closure reports are not on file at FTMC or ADEM and may not have been required at the time of closure. The status of the USTs is unknown.

The Rarden series soils cover the entire parcel. This series consists of moderately well drained, strongly acid to very strongly acid soils. They generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with soil that has a strong brown color. Concretions and fragments of sandstone, up to one-half inch in diameter are commonly on and in the soil. The specific category of this soil for Parcel 149(7) is Rarden silty clay loam, shallow, 2 to 6 percent slopes, severely eroded (ReB3).

---

This type of Rarden soil has mild slopes, high erosion and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0 to 14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow and capacity for available moisture is low. Depth to the water is more than 20 feet bls. Depth to bedrock is approximately 1.5 to 4.0 feet bls (U.S. Department of Agriculture, 1961).

### ***1.3 Scope of Work***

The scope of work for activities associated with the Former Motor Pool Area 600, Parcels 149(7) and 136(7), as specified in the statement of work (U.S. Army Corps of Engineers [USACE], 1998), include the following tasks:



- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 11 surface soil, 13 subsurface soil, 1 surface water, 1 sediment, 7 groundwater, and 1 depositional soil sample to determine the presence or absence of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared to evaluate the presence or absence of contaminants at this site, and to recommend further remedial action, if appropriate.

## ***2.0 Summary of Existing Environmental Studies***

---

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

Previous studies to document site environmental conditions on Parcel 149(7) have not been conducted. Therefore, Former Motor Pool Area 600, Parcels 149(7) and 136(7) site was classified as Category 7: Areas that are not evaluated or require further evaluation.

## **3.0 Site-Specific Data Quality Objectives**

---

### **3.1 Overview**

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Motor Pool Area 600, Parcel 149(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund, Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Former Motor Pool Area 600, Parcel 149(7) is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the SI, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the site investigation at the Former Motor Pool 600, Parcel 149(7) site, presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual potential site-specific chemicals (PSSC) in site media.

Table 3-1

**Summary of Data Quality Objectives**  
**Former Motor Pool Area 600, Parcels 149(7) and 136(7)**  
**Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Petroleum products	Surface Soil	SI to confirm whether potential site-specific chemicals are present in the site media.	<u>Surface soil</u> TCL VOC, SVOC TAL Metals	Definitive data with CESAS Level B packages	13 direct push + QC
		<u>Migration Pathways</u> Soil	Subsurface Soil		<u>Subsurface Soil</u> TCL VOC, SVOC TAL Metals	Definitive data with CESAS Level B packages	13 direct push + QC
		Infiltration to subsurface soil	Groundwater				
		Infiltration and leaching to groundwater	Surface Water	Definitive quality data for future decision making	<u>Groundwater</u> TCL VOC, SVOC TAL Metals	Definitive data with CESAS Level B packages	9 direct push + QC
		Discharge of groundwater to surface water	Sediment				
		Erosion and runoff to surface water and sediment	Depositional Soil		<u>Surface Water</u> TCL VOC, SVOC TAL Metals	Definitive data with CESAS Level B packages	1 location
		Dust emissions and volatilization from soil and surface water to ambient air					
		Potential Receptors Groundskeeper (current and future) Construction worker (current and future) Resident (future) Recreational site user (future)					
		<u>PSSCs</u> Fuel components Metals			<u>Sediments</u> TCL-VOCs, SVOCs TAL Metals TOC, grain size	Definitive data with CESAS Level B packages	1 location
					<u>Depositional Soil</u> TCL VOC, SVOC TAL Metals	Definitive data with CESAS Level B packages	1 location

QC - Quality control.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
TCL - Target compound list.  
TOC - Total organic carbons.  
USACE - U.S. Army Corps of Engineers.  
VOC - Volatile organic compound.

ADEM - Alabama Department of Environmental Management.  
CESAS - Corps of Engineers South Atlantic Division.  
DOD - U.S. Department of Defense.  
EPA - U.S. Environmental Protection Agency.  
PAH - Polychlorinated biphenyl.  
PSSC - Potential site-specific chemicals.

### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Parcel 149 is due to the use of this area as the former Motor Pool Area 600. Former operations at this site are not documented, however, EBS parcel descriptions state that vehicle maintenance was performed at the site and a wash rack, oil/water separator, and UST were located here. Currently, the site houses the Wildlife Management Office, and the offices of roads and grounds operations. Scrap metal and old golf carts are currently stored here. The site walkover revealed evidence of drums and excavating to install or replace underground lines. It is assumed that releases of any potential contaminants are restricted to surface soil and sub-surface soil. Potential contaminant transport pathways include infiltration to subsurface soil, ~~infiltration and leaching to groundwater, discharge of groundwater to the surface water, and~~ erosion and runoff to the surface water and sediment, and dust emissions and volatilization from soil and surface water to ambient air. Potentially affected tributaries are located west and east of the site.

Current site use is best described as industrial. Plausible receptors under current site use are limited to the groundskeeper and construction worker. The residential, venison, and fish receptor scenarios were considered but not included in the CSEM, given current activities at this site.

Future plans call for further development of the site for light industrial and warehouse use (FTMC, 1997). The area is also sufficiently large to accommodate research facilities. The most plausible receptors for the future site use scenario include the groundskeeper and construction worker. Although unlikely, future plans may determine a need for additional residential

communities. The residential and recreational site use scenarios are also added as less likely, but possible receptors. The venison and fish consumption scenarios are excluded as they are highly unlikely possibilities at, or in association with this site.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Motor Pool Area 600, Parcels 149(7) and 136(7) site. Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

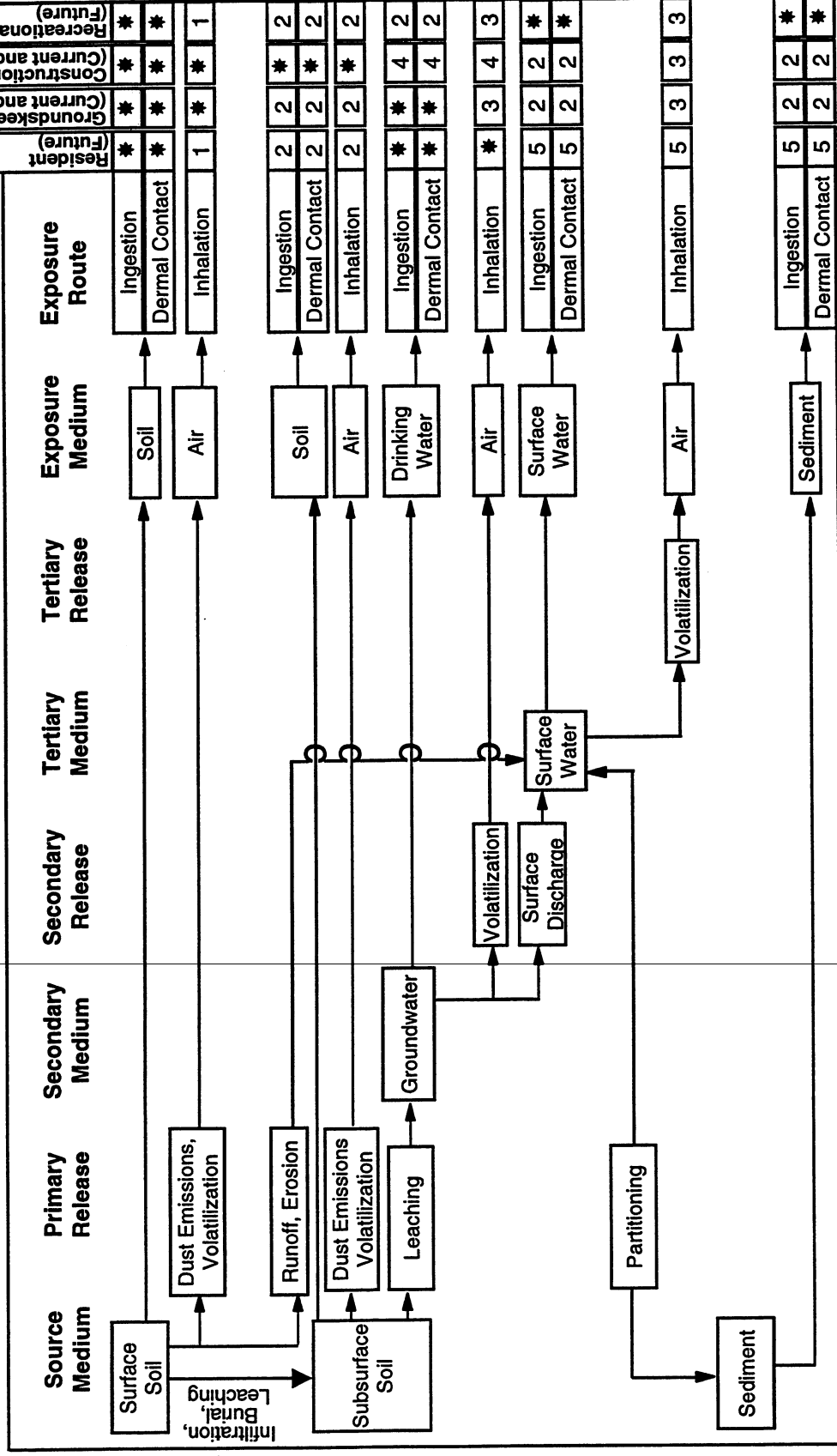
Confirmation of the presence or absence of contamination at the Motor Pool Area 600, Parcels 149(7) and 136(7) site will be based on a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. Definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a feasibility study and risk assessment.

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#### ***3.4.2 Data Types and Quality***

Surface and subsurface soil, depositional soil, sediment, surface water and groundwater will be sampled and analyzed in order to meet the objectives of the site investigation at the Motor Pool 600, Parcels 149(7) and 136(7) site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

**Figure 3-1**  
**Human Health Conceptual Site Exposure Model for Motor Pool Area 600**  
**Parcels 136(7) and 149(7)**  
**Fort McClellan, Alabama**



\* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; Inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the construction worker would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this site investigation are provided in Section 9.0 of the QAP.



## **4.0 Field Activities**

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The parcels of property being investigated under this SI were identified during the EBS (ESE, 1998) and categorized as a Category 7 site. Category 7 indicates the sites that have not been evaluated or need additional investigation. To meet the objectives of Section 1.3 and Chapter 3.0, the environmental sampling program at the Former Motor Pool Area 600 site will consist of surface and subsurface soil sampling, groundwater sampling, surface water and sediment sampling, and depositional soil sampling.

### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Geophysical Survey**

Parcel 136(7) is reported to have contained a UST; however, the exact location of the former UST could not be confirmed during either the EBS (ESE, 1998) or the IT site visit in April 1998. Therefore, a geophysical survey will be conducted at Parcel 136(7) to locate the UST in order to locate the proposed sample locations within the proper area of concern.

A surface geophysical survey using magnetics, time- and frequency-domain electromagnetic (EM) induction, and ground penetrating radar (GPR) techniques will be conducted over Parcel 136(7) to locate and delineate the UST at the site.

#### **4.2.1 Methodology and Instrumentation**

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). The time-domain EM surveys will be conducted using a Geonics EM61 high-resolution metal detector coupled to an Omnidata DL720 digital data logger. Frequency-domain EM surveys will be conducted using a Geonics EM31 and EM34-3XL terrain conductivity meter, each coupled to an Omnidata DL720 digital data logger. Use of the G-858G and the EM31 is the preferred method of detecting tanks; however, in areas of significant cultural interference (e.g., structures, fences, reinforced concrete), the EM61 will be employed since this system is less affected by surface culture. The EM34-3XL surveys will be conducted based on site-specific

conditions in which deep burial of target materials is suspected. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent, will be used confirm the presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 or EM61 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the installation-wide SAP and the following IT standard operating procedures (SOP) for geophysical investigations:

- ITGP-001; Surface Magnetic Surveys
- ITGP-002; Surface Frequency-Domain EM Surveys
- ITGP-003; GPR Surveys
- ITGP-004; Surface Time-Domain EM Surveys
- ITGP-005; Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
  - Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- 
- Conduct a visual inspection of the sites to verify the likely locations of the target USTs.
  - Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, base grids will be staked throughout each site such that the resolution objectives of the investigation are achieved (typically 50- to 100-foot centers). The base grids will be established using either a GPS or conventional civil surveying techniques. The geophysics base

grids will be referenced to the Alabama State Plane Coordinate System. Using the base grids as a reference, the geophysics crew will mark control points on 20-foot centers throughout each site with surveyor's paint and/or plastic pin flags. To the extent possible, the grids will be oriented in the north to south (N-S) direction. If vegetation or surface metal is present, it shall be removed where necessary prior to collecting geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EMI and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Anomalies caused by subsurface source materials the size of a UST will be marked in the field for further characterization with GPR. Ground-penetrating radar will be used to discriminate between anomalies caused by USTs and those potentially caused by pits containing significant metal debris.

The conclusions from the geophysical survey at Parcel 136(7) will be incorporated into the SI report. Geophysical results will be used to properly position the proposed sample locations at Parcel 136(7).

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#### **4.2.2 Areal Coverage**

Parcel 136(7) geophysical surveys will encompass an area of approximately 200 feet by 200 feet. The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 10 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 10 feet apart.
- EM34-3XL survey data will be collected, if necessary, using the 10- and 20-meter intercoil spacing configuration. Data will be collected in the vertical and horizon-

tal dipole orientations at 2.5-meter intervals along N-S oriented survey lines spaced 2.5 meters apart.

- EM61 survey data will be collected at approximate 2-foot intervals along N-S and E-W oriented survey lines spaced 10 feet apart.
- GPR profile data will be collected to further characterize anomalies potentially representing the USTs seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 or EM61 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large buried metal objects. The locations of interpreted pipelines will be marked in the field with paint and placed on the site map.

It is anticipated that three of the geophysical surveys described will be conducted: G858G magnetic gradiometer, EM31, and EM61. However, as field conditions dictate, some or all of the survey techniques will be utilized.

#### ***4.2.3 Underground Storage Tank Exploratory Test Pits***

Upon completion of the geophysical survey at each site, the data will be reviewed for possible anomalies indicative of USTs. Anomalies that are found of typical size and in logical areas for USTs (i.e., adjacent to typical FTMC gas station foundations) will be identified and labeled as USTs. Anomalies that are of typical sizes but not in logical locations for USTs will be labeled as potential USTs.

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At each anomaly labeled as a potential UST, an exploratory test pit will be excavated to determine if the feature or anomaly detected is either a UST or is not a UST. These UST exploratory test pits will be excavated using a backhoe equipped with a 3-foot-wide bucket. If the presence of a UST is confirmed, the UST will not be removed. The excavated soil will be returned to the test pit and the location marked with a stake. The location and observations will be recorded in the field log.

If some type of material other than a UST is found, the type of material and location will be noted in the field log and the material will be placed back in the excavation. The location will be marked with a stake. If nothing is found in the excavation, the test pit will be backfilled with the excavated material. The label “potential tank” will be removed from the location of the geophysical anomaly.

### **4.3 Environmental Sampling**

The environmental sampling performed during the site investigation at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) will include the collection of surface and subsurface soil, sediment, depositional soil, surface water, and groundwater samples for chemical analysis. These samples will be collected and analyzed to provide data for characterizing the site to determine the environmental condition or to identify the need for further action at the site.

The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media sampled, location descriptions and rationale for each sample are summarized in Table 4-1. The sample designations and QA/QC sample quantities are summarized in Tables 4-2, 4-3, and 4-4.

#### **4.3.1 Surface Soil Sampling**

Surface soil samples will be collected from 11 soil borings at the Former Motor Pool Area 600 site.

##### **4.3.1.1 Sample Locations and Rationale**

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

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##### **4.3.1.2 Sample Collection Procedures**

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from 13 soil borings at the Former Motor Pool Area 600 site.

Table 4-1

**Site Sampling Rationale**  
**Motor Pool Area 600, Parcels 149(7) and 136(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
FTA-149-GP01	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected for upgradient coverage (NE corner) to determine if potential site-specific chemicals (PSSC) are present.
FTA-149-GP02	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected for downgradient coverage (NW corner) to determine if PSSC are present.
FTA-149-GP03	Surface Soil, Subsurface Soil	Soil will be collected for coverage midway of north boundary and potential tank location [136(7)] to determine if PSSC are present.
FTA-149-GP04	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected near the parcel west boundary, approximately one-third distance from north end of site and near the location of the depositional soil sample site. This location is the most probable exit of surface water from the site (a lower elevation).
FTA-149-GP05	Surface Soil, Subsurface Soil, Groundwater	Soil will be collected near the site of the potential tank 136(7), south for upgradient coverage to determine if PSSC are present.
FTA-149-GP06	Surface Soil, Subsurface Soil, Groundwater	Soil will be collected near the site of the potential tank (136(7), east for coverage near the boundary to determine if PSSC are present.
FTA-149-GP07	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected downgradient of potential UST and in north-central portion of site to determine if PSSC are present.
FTA-149-GP08	Surface Soil, Subsurface Soil	Soil will be collected between the two buildings (698 and 694) to determine if PSSC are present.
FTA-149-GP09	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected midway of west boundary and near the diqinq for lines and evidence of drums to determine if PSSC are present.
FTA-149-GP-10	Surface Soil, Subsurface Soil	Soil will be collected approximately midway between the parcel front boundary and the potential tank 136(7) location to determine if PSSC are present.
FTA-149-GP-11	Surface Soil, Subsurface Soil	Soil will be collected near the west boundary approximately midway from the parcel from on 18th Street and GP09 to determine if PSSC are present.
FTA-149-GP-12	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected for coverage upgradient at the parcel from (SE) to determine if PSSC are present.
FTA-149-GP-13	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected for coverage downgradient at the parcel front (SW) to determine if PSSC are present.
FTA-149-SW/SD01	Surface Water, Sediment	Surface water and sediment will be collected approximately two-thirds distance from parcel front on 18th Street along west boundary in the stream that runs parallel to the parcel boundary to determine if PSSC are present.
FTA-149-DEP01	Depositional Soil	Depositional soil will be collected adjacent to the west parcel boundary approximately two-thirds distance from parcel front at the most probable point of exit for surface water runoff. Evidence of contaminant mobility at any point within the site would likely be integrated at this location.

Table 4-2

**Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities**  
**Former Motor Pool Area 600, Parcels 149(7) and 136(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-149-GP01	FTA-149-GP01-SS-DG0001-REG	0-1.0	FTA-149-GP01-SS-DG0002-FD	FTA-149-GP01-SS-DG0003-FS	FTA-149-GP01-SS-DG0001-MS FTA-149-GP01-SS-DG0001-MSD	TCL VOCs, SVOCs, TAL Metals
FTA-149-GP02	FTA-149-GP02-SS-DG0005-REG	0-1.0	FTA-149-GP02-SS-DG0006-FD	FTA-149-GP02-SS-DG0007-FS		TCL VOCs, SVOCs, TAL Metals
FTA-149-GP03	FTA-149-GP03-SS-DG0009-REG	0-1.0	FTA-149-GP03-SS-DG0010-FD	FTA-149-GP03-SS-DG0011-FS		TCL VOCs, SVOCs, TAL Metals
FTA-149-GP04	FTA-149-GP04-SS-DG0013-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP05	FTA-149-GP05-SS-DG0015-REG	b				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP06	FTA-149-GP06-SS-DG0016-REG	b				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP07	FTA-149-GP07-SS-DG0017-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP08	FTA-149-GP08-SS-DG0019-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP09	FTA-149-GP09-SS-DG0021-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP10	FTA-149-GP10-SS-DG0023-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP11	FTA-149-GP11-SS-DG0025-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP12	FTA-149-GP12-SS-DG0028-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-GP13	FTA-149-GP13-SS-DG0029-REG	0-1.0				TCL VOCs, SVOCs, TAL Metals
FTA-149-DEP01	FTA-149-DEP01-DEP-DG0031-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals

\* Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on field observations

<sup>b</sup> Depth of sample to be immediately below the estimated bottom of the UST.

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities  
Former Motor Pool Area 600, Parcels 149(7) and 136(7)  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-149-GP01	FTA-149-GP01-GW-DG3001-REG	a			FTA-164-GP01-GW-3001-MS FTA-164-GP01-GW-3001-MSD	TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP02	FTA-149-GP02-GW-DG3002-REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP04	FTA-149-GP04-GW-DG3003-REG	a	FTA-149-GP04-GW-DG3004-FD	FTA-149-GP04-GW-DG3005-FS		TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP07	FTA-149-GP07-GW-DG3006-REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP09	FTA-149-GP09-GW-DG3007-REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP12	FTA-149-GP12-GW-DG3008-REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-149-GP13	FTA-149-GP13-GW-DG3009-REG	a				TCL VOCs, TCL SVOCs TAL Metals

\* Actual groundwater sample depth will depend on first encounter of water sufficient enough to collect a sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.



Table 4-4

**Surface Water and Sediment Sample Designations and QA/QC Sample Quantities**  
**Former Motor Pool Area 600, Parcels 149(7) and 136(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples		MS/MSD	Analytical Suite
			Field Duplicates	Field Spills		
FTA-149-SW/SD01	FTA-149-SW/SD01-SW-DG2001-REG	NA				TCL VOCs, TCL SVOCs, Total TAL Metals
	FTA-149-SW/SD01-SD-DG1001-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals, TOC, Grain Size
FTA-149-DEP01	FTA-149-DEP01-DEP-DG0001-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals

MS/MSD - Matrix spike/matrix spike duplicate.

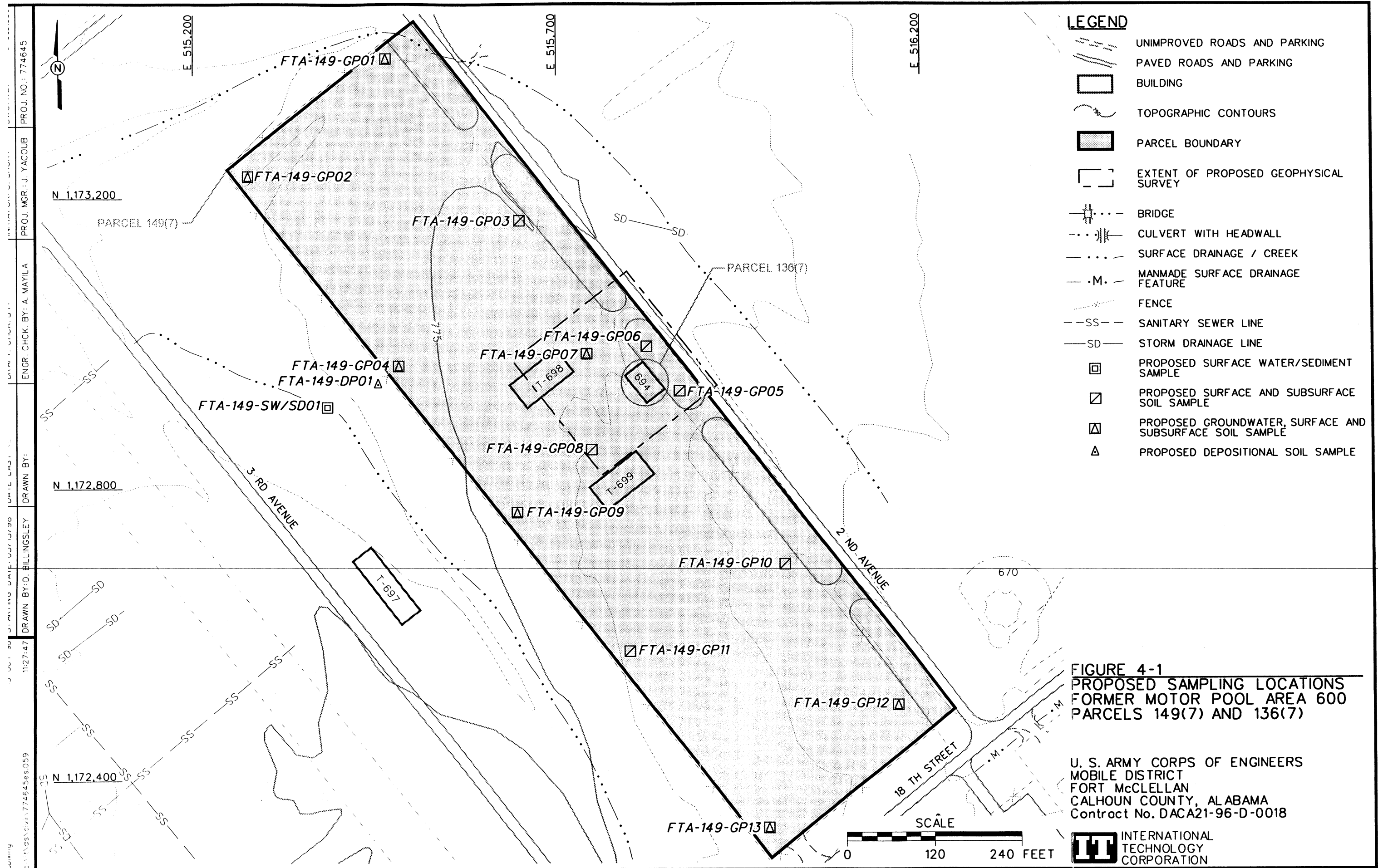
QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.



PROJ. NO.: 774645  
PROJ. MGR.: J. YACOB  
ENGR. CHCK. BY: A. MAYILA  
DRAWN BY: D. BILLINGSLEY  
DATE: 11/27/47  
DRAWING DATE: 03/13/90  
DATE LAST: 11/27/47  
DRAWING NO.: 774645es.059

#### **4.3.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the same soil borings as described in Section 4.3.1.1. Subsurface soil samples will be collected from the 13 soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

#### **4.3.2.2 Sample Collection Procedures**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously to 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated levels (above background ambient air) on the PID, the deepest interval will be submitted for laboratory analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

### **4.3.3 Direct-Push Groundwater Sampling**

Groundwater samples will be collected from direct-push temporary wells installed at the site. Direct-push temporary wells will be completed in seven of the soil borings described in Section 4.3.2 to collect groundwater samples.

#### **4.3.3.1 Sample Locations and Rationale**

Seven groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the direct-push temporary wells shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

#### **4.3.3.2 Sample Collection Procedures**

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.7.1.1 and 4.9.1.4 of the SAP. The direct-push temporary well at each location will be completed at the water table surface (at a depth where sufficient water is encountered) to collect a groundwater sample.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

### **4.3.4 Surface Water Sampling**

One surface water sample will be collected from the small creek near the site. The creek parallels the western border of the parcel and flows north-northwest.

#### **4.3.4.1 Sample Locations and Rationale**

The surface water sampling rationale are listed in Table 4-1. The surface water sample will be collected from the location proposed on Figure 4-1. The surface water sample designation and required QA/QC sample quantities are listed in Table 4-4. The exact sampling location will be determined in the field based on drainage pathways and actual field observations.

#### **4.3.4.2 Sample Collection Procedures**

The surface water sample will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as

specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

#### **4.3.5 Sediment Sampling**

One sediment sample will be collected at the same location as the surface water sample presented in Section 4.3.4.

##### **4.3.5.1 Sample Locations and Rationale**

The tentative location for the sediment sample to be collected is shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. The sediment sample designation and required QA/QC sample quantities are listed in Table 4-4. The actual sediment sample point selected will be based on the drainage pathways and actual field observations.

##### **4.3.5.2 Sample Collection Procedures**

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

#### **4.3.6 Depositional Soil Sampling**

One depositional soil sample will be collected near the creek outside the fence near the northwest corner of the parcel.

---

##### **4.3.6.1 Sample Locations and Rationale**

The depositional soil sample will be collected outside the fence near the northwest corner of the parcel. The sampling rationale is listed in Table 4-1. The proposed sampling location is shown in Figure 4-1. The depositional soil sample designation and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point selected will be based on the drainage pathways and on actual field observations.

##### **4.3.6.2 Sample Collection Procedures**

The depositional soil sample will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in

Section 5.0, Table 5-1, of the QAP. The sample will be analyzed for the parameters listed in Section 4.6.

#### **4.4 Decontamination Requirements**

Decontamination will be performed on sampling and non-sampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

#### **4.5 Surveying Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for both horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

---

Procedures to be used for GPS surveying are described in Section 4.2.5 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### **4.6 Analytical Program**

Samples collected at locations specified in Chapter 4.0 will be analyzed for various physical and chemical properties. The specific suite of chemicals to be analyzed is based on the potential contaminants of concern, which are based on the history of the site, and EPA, ADEM, FTMC, and USACE requirements. The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE,

Table 4-5

**Analytical Samples**  
**Former Motor Pool Area 600, Parcels 149(7) and 136(7)**  
**Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples <sup>a</sup>				Quanterra				
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spills w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	QA Lab Total No. Analysis		
Parcel 149(7) Motor Pool Area 600: 7 groundwater, 1 surface water, 11 surface soil, 13 subsurface, 1 depositional soil, and 1 sediment															
TCL VOCs	8260B	water	normal	8	1	8	1	1	1	2	1	14	1		
TCL SVOCs	8270C	water	normal	8	1	8	1	1	1	1	1	12	1		
Tot TAL Metals	6010B/7000	water	normal	8	1	8	1	1	1	1	1	12	1		
TCL VOCs	8260B	soil	normal	26	1	26	2	1	1	1	1	31	1		
TCL SVOCs	8270C	soil	normal	26	1	26	2	1	1	1	1	31	1		
TAL Metals	6010B/7000	soil	normal	26	1	26	2	1	1	1	1	31	1		
TOC	9060	sediment	normal	1	1	1									
Grain Size	ASTM D-421/D-422	sediment	normal	1	1	1									
Former Motor Pool Area 600 Subtotal:				104						9	6	6	2	131	6

<sup>a</sup>Equipment rinseate samples will be collected per the task work plan on samples that are collected using nondisposable or nondetected equipment.

## Ship samples to:

Quanterra Environmental Services  
 5815 Middlebrook Pike  
 Knoxville, Tennessee 37921  
 Attn: John Reynolds  
 Tel: 423-588-6401  
 Fax: 423-584-4315

USACE Laboratory split samples  
 are shipped to:

USACE South Atlantic Division Laboratory  
 Attn: Sample Receiving  
 611 South Cobb Drive  
 Marietta, Georgia 30060-3112  
 Tel: 770-421-5295

MS/MSD - Matrix spike/matrix spike duplicate.  
 QA/QC - Quality assurance/quality control.  
 SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 TOC - Total organic carbon.  
 USACE - U.S. Army Corps of Engineers.  
 VOC - Volatile organic compound.

1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. Target analyses for samples collected from the Former Motor Pool Area 600 consist of the following list of parameters:

- Target Compound List (TCL) VOCs - Method 5035/8260B
- TCL Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000
- Total organic carbon - Method 9060 (sediment only)
- Grain size - American Society for Testing and Materials D421/D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SSFP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). The chemical data will be reported via hard copy data packages by the laboratory using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

The field sampling coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

#### ***4.7 Sample Preservation, Packaging, and Shipping***

~~Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.1 and 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:~~

Sample Receiving  
Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401



USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060  
Telephone: (770) 919-5270

#### ***4.8 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes (IDW) will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Motor Pool Area 600, Parcels 149(7) and 136(7) site will include decontamination fluids and possibly disposable personal protective equipment, and will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

## 6.0 References

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Environmental Science & Engineering Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

U.S. Army Corps of Engineers (USACE), 1998, ***Statement of work for Task Order CK005, Site Investigations at Fort McClellan, Alabama***, January.

U.S. Army Corps of Engineers (USACE), 1997, ***Final Archives Search Report Conclusions and Recommendations, Fort McClellan, Calhoun County, Alabama***, U.S. Department of Defense Base Alignment and Closure Ordnance, Ammunition and Explosives, St. Louis District.

U.S. Army Corps of Engineers (USACE), 1994, ***Requirements for the Preparation of Sampling and Analysis Plan***, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, ***Soil Survey, Calhoun County, Alabama***, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No.9, September.

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Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

**Final  
Site-Specific Field Sampling Plan Attachment  
Site Investigation at Motor Pool Area 800,  
Parcels 164(7), 11(7), 68(7), and 12(7)  
Fort McClellan  
Calhoun County, Alabama**

**Prepared For:**

**U.S. Army Corps of Engineers, Savannah District  
109 St. Joseph Street,  
Mobile, Alabama 36602**

**Prepared By:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

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**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**October 1998**

**Revision 1**

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## **List of Acronyms**

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ADEM	Alabama Department of Environmental Management
ASR	archives search report
CLP	Contract Laboratory Program
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
IT	IT Corporation
mm	millimeter
NGVD	National Geodetic Vertical Datum
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
RCRA	Resource Conservation and Recovery Act
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SSHP	site-specific safety and health plan
SVOC	semivolatile organic compound
TAL	target analyte list
TCL	target compound list
USACE	U.S. Army Corps of Engineers
UST	underground storage tank
VOC	volatile organic compound
WMP	waste management plan
WP	installation-wide work plan



## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Motor Pool Area 800, Parcel 164(7) to determine the presence or absence of potential site-specific chemicals. The site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Motor Pool Area 800, Parcel 164(7). IT will collect 15 surface soil, 12 subsurface soil, 9 groundwater (plus 4 from existing wells), 5 surface water, 5 sediment, 5 surface water, and 1 depositional soil sample at this site.

IT will collect samples for parameters that include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Motor Pool Area 800, Parcel 164(7) will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat specific ecological risk assessment work plan, and the installation-wide WP (IT, 1998b), and SAP. The SAP includes the installation-wide safety and health plan, the waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Motor Pool Area 800, Parcel 164(7) is predominately a fuel storage area comprised of existing and removed underground storage tanks, an oil-water separator, wash rack, and vehicle storage area. Because of the lack of information concerning potential contaminants at this site, a site investigation is being conducted to determine the presence or absence of contaminants.

## ***1.0 Project Description***

---

### ***1.1 Introduction***

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Motor Pool Area 800, Parcel 164(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Former Motor Pool Area 800, Parcel 164(7) (Figure 1-1). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Motor Pool Area 800 Site, and the installation-wide work plan (WP) (IT, 1998b), the habitat specific ecological risk assessment work plan, and SAP. The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP).

### ***1.2 Site Description***

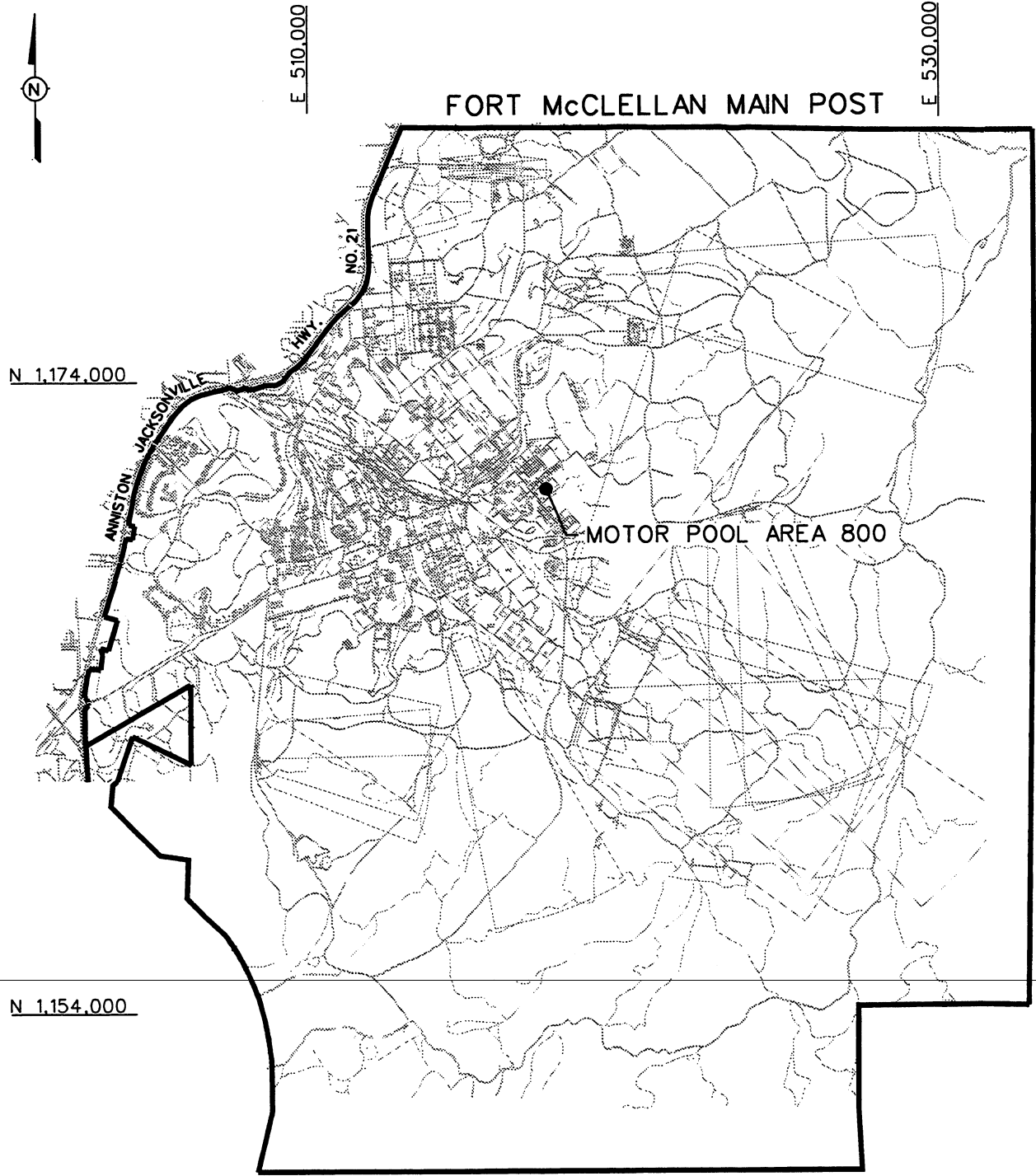
Motor Pool Area 800, Parcel 164(7), is located east-central on Main Post (Figure 1-1). It is a rectangular plot oriented NE-SW on Third Avenue near 21st Street, and is still in use. (Figure 1-2). One washrack, one oil/water separator and a loading ramp are located on this parcel. Currently, an above ground fuel storage facility is also located there. Two underground storage tanks (UST) issues were also identified at this parcel. The elevation of the site is approximately 800 feet. Generally, the ground slopes to the west and southwest. On the south side of the property, a small stream is flowing to the southwest. The north boundary is adjacent to a large drainage feature with water flowing southwest to the front of the property into a concrete drain. At the northeast corner of the site is a medium sized drain pipe. It is adjacent to the washrack and behind the oil/water separator. Three small buildings are located near the front of the property, along with a large concrete foundation with a configuration similar to the building still in use that is adjacent to the parcel. The site walk-over did not reveal any evidence of the tanks indicated on the environmental baseline survey (EBS) map.

The 613<sup>th</sup> BN and 4<sup>th</sup> Combat Support Hospital, Building 866, Parcel 68(7) was built around 1941 and had a rotating skimmer type oil/water separator. This facility was rebuilt in 1991 and


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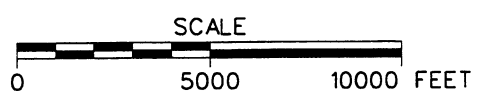


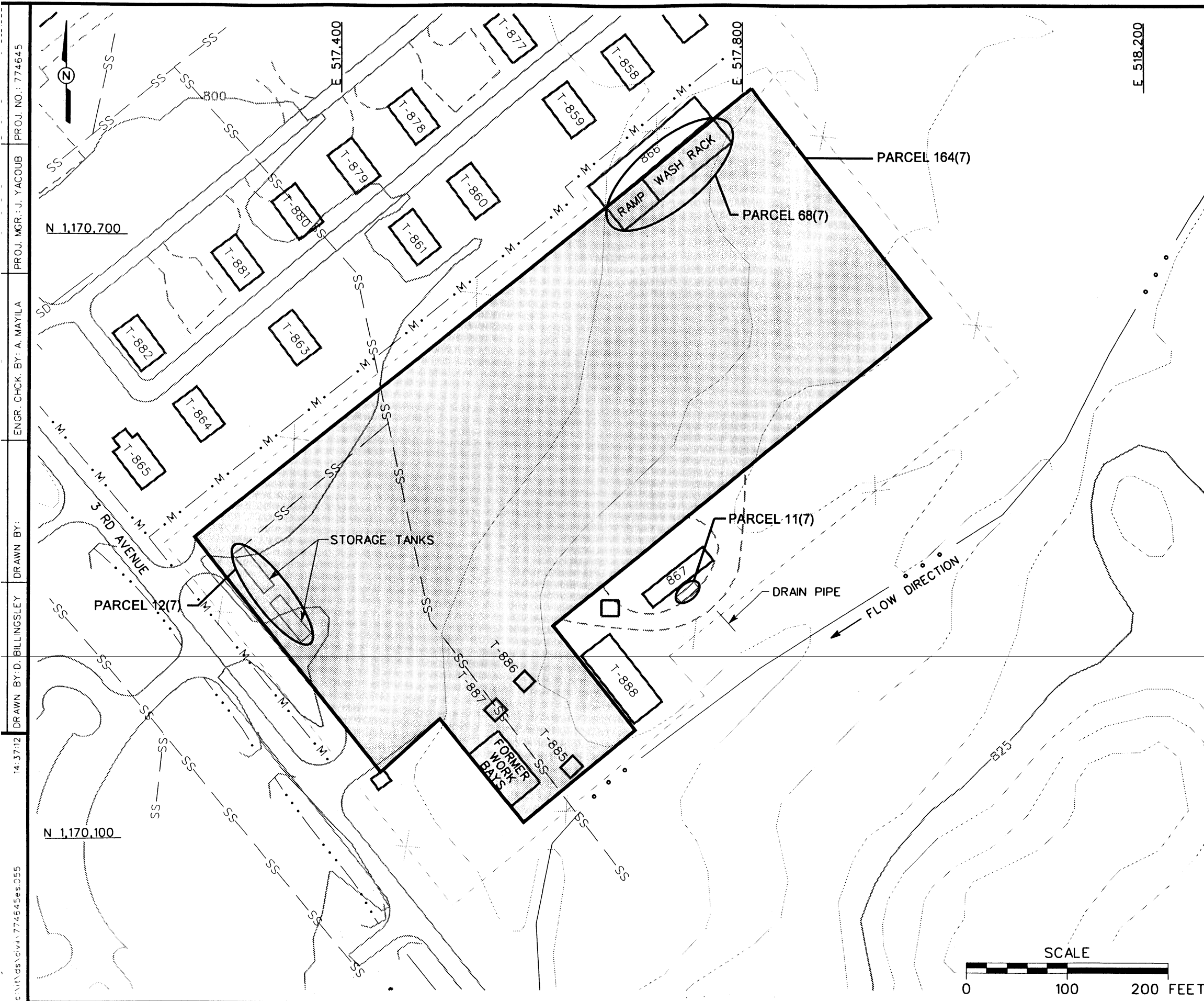
**LEGEND:**

 FORT McCLELLAN BOUNDARY

**FIGURE 1-1**  
**SITE LOCATION MAP**  
**MOTOR POOL AREA 800**  
**PARCELS 164(7), 11(7), 68(7), & 12(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018





- LEGEND**
- UNIMPROVED ROADS AND PARKING
  - PAVED ROADS AND PARKING
  - BUILDING
  - TOPOGRAPHIC CONTOURS
  - PARCEL BOUNDARY
  - BRIDGE
  - CULVERT WITH HEADWALL
  - SURFACE DRAINAGE / CREEK
  - MANMADE SURFACE DRAINAGE FEATURE
  - FENCE
  - SANITARY SEWER LINE
  - STORM DRAINAGE LINE

**FIGURE 1-2**  
**SITE MAP**  
**MOTOR POOL AREA 800**  
**PARCELS 164(7), 11(7), 68(7), & 12(7)**

U. S. ARMY CORPS OF ENGINEERS  
 MOBILE DISTRICT  
 FORT McCLELLAN  
 CALHOUN COUNTY, ALABAMA  
 Contract No. DACA21-96-D-0018

INTERNATIONAL TECHNOLOGY CORPORATION

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now has a settling basin attached to a coalescing plate oil/water separator, which discharges to the sanitary sewer (EBS, 1998). This facility is currently operated by the National Guard.

Parcel 11(7) is a UST associated with Building 888 on Parcel 164(7). According to the EBS, the basis for site investigation at this site is potential contamination of the soil. The site was cleared in 1995 by Alabama Department of Environmental Management (ADEM) for no-further action with the understanding that the land use and property owners would not change (ADEM, 1995). This UST is adjacent to (south) a formerly used grease pit and has four existing monitor wells associated with it. A small drainpipe (approximately 6 inches diameter) is located near the fenceline directly south of the tank.

Parcel 12(7) consists of USTs associated with Building 894 on Parcel 164(7). According to the EBS, two tanks (one Mogas, one diesel), were removed in 1991.

That location is now the location of two fuel aboveground storage tanks (AST). There is no closure report on file. This site is also one of the former 1941 gas stations constructed with a concrete 9 feet by 21 feet pad and corrugated steel walls. The tanks are reported to be located in front of the former building. Evidence of the building was not noted during a site walk-over.

Two soil series are present at this parcel site; the Montevallo Series and the Rarden Series. The Montevallo Series covers the larger portion of the site with Rarden soils on the front and on the southwest corner of the site. The Montevallo Series consists of shallow, well-drained, strongly acid soils. They have developed in the residuum of interbedded shale and fine-grained sandstone or limestone. Where these soils are not eroded, the surface soil is very dark grayish-brown to very dark brown shaly silt loam. The subsoil is yellowish-brown shaly silt loam. Fragments of shale, less than 2 inches square, are commonly on and in the soil. Runoff, internal drainage and permeability are rapid. Infiltration is medium. The capacity for available moisture is low. The specific soil unit for Parcel 164(7) is Montevallo shaly silty clay loam 10 to 40 percent slopes severely eroded (MtD3). Erosion has removed all or nearly all of the original surface soil. The top layer is now a yellowish-brown shaly silty clay loam. Depth to water is greater than 20 feet bls and depth to bedrock is between 1 to 1.5 feet bls.

The soils at Parcel 164(7) on the front and southwest corner of the site are classified in the Rarden series. These soils consist of moderately well drained, strongly acid to very strongly acid soils. They generally occur in large areas on wide shale ridges. They have developed from the residuum of shale and fine-grained, platy sandstone or limestone. In eroded areas, the surface

soil is brown silt loam. The subsoil is yellowish-red clay or silty clay mottled with strong brown. Concretions and fragments of sandstone, up to one-half inch in diameter are commonly on and in the soil. The specific category of this soil for Parcel 164(7) is Rarden silty clay loam, shallow, 2-6 percent slopes, severely eroded (ReB3). This type of Rarden soil has mild slopes, high erosion and high runoff. Erosion has removed all or nearly all of the original brown silt loam surface soil (depth from surface is 0-14 inches). The depth of the subsoil ranges from 14 to 44 inches from the surface. Erosion is a serious hazard. Infiltration is medium, permeability is slow and capacity for available moisture is low. Depth to water table is greater than 20 feet bls, and depth to bedrock is between 1.5 to 4.0 feet bls (U.S. Department of Agriculture, 1961) .

### ***1.3 Scope of Work***

The scope of work for activities associated at the Motor Pool Area 800, Parcel 164(7), as specified in the statement of work (USACE, 1998b), include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect 15 surface soil, 12 subsurface soil, 5 surface water, 5 sediment, 9 groundwater (plus 4 groundwater from existing monitoring wells) and 1 depositional soil sample to determine the absence or presence of contaminants, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current U.S.

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Environmental Protection Agency (EPA) Region IV and the Alabama Department of Environmental Management (ADEM) requirements.

## ***2.0 Summary of Existing Environmental Studies***

---

An environmental baseline survey (EBS) was conducted by Environmental Science and Engineering, Inc (ESE) (1998) to document current environmental conditions of all FTMC property. The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release or disposal (including migration) has occurred
2. Areas where only storage has occurred
3. Areas of contamination below action levels
4. Areas where all necessary remedial actions have been taken
5. Areas of known contamination with removal and/or remedial action under way
6. Areas of known contamination where required response actions have not been taken
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed of all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)-regulated substances, petroleum products, and Resource Conservation and Recovery Act (RCRA)-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels. The Motor Pool Area 800, Parcel 164(7) site was identified as a site where further evaluation was needed. Previous environment studies have not been conducted at this site except for the USTs at Parcels 11(7) and 12(7).

Parcel 11(7) is a UST associated with Building 888 on Parcel 164(7). According to the EBS, the basis for site investigation at this site is potential contamination of the soil (Table 2-1). The site

**Table 2-1**

**Soil Chemistry Data  
1994  
Motor Pool Area 800, Parcel 11(7)  
Fort McClellan, Calhoun County, Alabama**

Location	TPH (ppm)	Total Lead (ppm)	Depth Vertical (ft)	Sample ID No.
North Sidewall "A"	750	24	3	94-045201
North Sidewall "B"	825	16	3	94-045207
North Sidewall "A"	5500	23	3	94-045202
North Sidewall "B"	8100	22	3	94-045208
East Sidewall "A"	4500	19	3	94-045203
East Sidewall "B"	3200	15	3	94-045209
West Sidewall "A"	2300	15	3	94-045204
West Sidewall "B"	2500	14	3	94-045210
Base "A"	800	5.3	9	94-045205
Base "B"	1050	11	11	94-045211
Stockpile	450	16	NA	94-045206

ft – Feet/foot.

ppm – Parts per million.

TPH – Total petroleum hydrocarbon.

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Source: Appendix A, UST Summary Report, June 1998, IT Corporation.



was cleared in 1995 by Alabama Department of Environmental Management (ADEM) for no-further action with the understanding that the land use and property owners would not change (ADEM, 1995). This UST is adjacent to (south) a formerly used grease pit and has four existing monitor wells. A small drainpipe (approximately 6 inches diameter) is located near the fenceline directly south of the tank.

This location contained one 2,000-gallon waste oil UST. The tank and product lines were removed from this area on April 30, 1994. This tank was not replaced. Soil samples were collected during tank removal activities and analyzed for TPH and total lead (Table 2-1). Groundwater was encountered at approximately 5 feet below land surface (bls). Elevated concentrations of TPH (greater than 100 ppm) were detected in the soil samples collected. The analysis of soil samples collected from the side walls and the base of the excavation showed TPH concentrations ranging from 750 ppm to 8,100 ppm and total lead ranging from 5.3 ppm to 24 ppm. Approximately 9 yd<sup>3</sup> of contaminated soils were removed and transported to the base landfill for thin spreading.

Four monitoring wells were installed and one round of groundwater sampling was completed (Table 2-2). Neither VOCs nor PAHs were detected in any of the wells. Lead was detected in MW-2. Based upon the groundwater flow direction, it was determined that MW-2 was hydraulically upgradient. The closure report concluded that a petroleum release had occurred and that the vertical and horizontal extent of the contamination in the soil had not been determined (Braun, 1995). According to the FTMC EBS, this site obtained a NFA from ADEM (December 4, 1995).

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A copy of the ADEM NFA letter was not obtained. Further environmental assessment is not warranted at this time.

Parcel 12(7) consists of USTs associated with Building 894 on Parcel 164(7). According to the EBS, two tanks (one Mogas, one diesel), were removed in 1991.

Documentation was reviewed on two 6,000-gallon tanks, one containing gasoline and the other diesel. Both tanks were removed on February 20, 1991 by IT. Six soil borings were drilled around the perimeter of the tanks prior to the tank closure. During tank removal activities, soil samples were collected from the walls and bottom of the excavation. Reference to the depth to groundwater was not noted. The analytical results for TPH ranged from ND to 5,300 ppm (Table 2-3). Contaminated soils were excavated and transported for thermal treatment. The extent of

**Table 2-2**

**Summary of Groundwater Results  
1994  
Motor Pool Area 800, Parcel 11(7)  
Fort McClellan, Calhoun County, Alabama**

Monitoring Well/Boring	Parameter	Analytical Results (µg/L)
MW-1	VOCs, lead, PAH	ND
MW-2	VOCs, lead, PAH	7 (lead)
MW-3	VOCs, lead, PAH	ND
MW-4	VOCs, lead, PAH	ND

µg/L - Micrograms per liter.  
ND - Parameter not detected.

Source: Appendix A, UST Summary Report, June 1998, IT Corporation.

**Table 2-3**

**Soil Chemistry Data  
1991  
Motor Pool Area 800, Parcel 12(7) UST  
Fort McClellan, Calhoun County, Alabama**

Sample ID	Location	Lead (µg/L)	Oil Grease (mg/kg)	Benzene (µg/kg)	Ethyl Benzene (µg/kg)	Toluene (µg/kg)	Xylenes (tot.) (µg/kg)
C4364	South Wall	ND	270	ND	ND	ND	ND
C4365	West Wall	ND	240	ND	ND	ND	ND
C4366	East Wall	ND	5300	ND	ND	ND	ND
C4367	North Wall	ND	ND	ND	ND	ND	ND
C4368	Northwest of Tank	ND	420	33	120`	780	1100
C4369	Southwest of Tank	ND	260	ND	ND	ND	ND
C4370	Northeast of Tank	ND	ND	3.8	55	170	310

µg/kg - Micrograms per kilogram

ND - Not detected

mg/kg - Milligrams per kilogram

µg/L - Micrograms per liter

Source: Appendix D, UST Summary Report, June 1998, IT Corporation.

excavation and the amount of soil that was removed for thermal treatment is unknown. Soil samples collected at 18 to 20 feet bls contained significant TPH concentrations.

That location is now the location of two fuel aboveground storage tanks (AST). There is no closure report on file. This site is also one of the former 1941 gas stations constructed with a concrete 9 feet by 21 feet pad and corrugated steel walls. The tanks are reported to be located in front of the former building. Evidence of the building was not noted during a site walk-over.

## **3.0 Site-Specific Data Quality Objectives**

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### **3.1 Overview**

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Motor Pool Area 800, Parcel 164(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071 *Data Quality Objectives Process for Superfund, Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Motor Pool Area 800, Parcel 164(7) is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the SI, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory in Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the site investigation at the Motor Pool Area 800, Parcel 164(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3 below. This conceptual model was developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual potential site-specific chemical (PSSC) in the site media.

Table 3-1

**Summary of Data Quality Objectives**  
**Site Investigation, Motor Pool Area 800, Parcels 11(7), 12(7), 68(7), and 164(7)**  
**Fort McClellan, County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Future land users	Parcel 11(7) UST removal Parcel 12(7) UST removal	<u>Contaminant Source</u> Petroleum products  <u>Migration Pathways</u> Surface water runoff to surface water Infiltration and leaching from subsurface soil to groundwater Discharge of groundwater to surface Dust emissions and volatilization from surface water and soil to ambient air  <u>Potential Receptors</u> Groundskeeper Construction worker Recreational site user Resident  <u>PSSC</u> Metals Fuels Oils	Soil  Groundwater  Surface Water  Sediment  Depositional soil	SI to confirm whether potential site-specific chemicals are present in the site media.      Definitive quality data for future decision making	<u>Surface Soil</u> TCL VOCs TCL SVOCs TAL Metals  <u>Subsurface Soil</u> TCL VOCs TCL SVOCs TAL Metals  <u>Groundwater</u> TCL VOCs TCL SVOCs Total TAL Metals  <u>Surface Water</u> TCL VOCs TCL SVOCs Total TAL Metals  <u>Sediment</u> TCL VOCs TCL SVOCs TAL Metals TOC Grain size <u>Depositional Soil</u> TCL VOCs TCL SVOCs TAL Metals	Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages	14 direct push + QC    12 direct push + QC   9 direct push + QC and 4 from existing wells  5 + QC  5 + QC  1 + QC

ADEM - Alabama Department of environmental Management.  
 CESAS - Civil Engineering South Atlantic Savannah (U.S. Army Corps of Engineers ).  
 DOD - U.S. Department of Defense.  
 EPA - U.S. Environmental Protection Agency.  
 PSSC - Potential site-specific chemicals.  
 QC - Quality control.  
  
 SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 TCL - Target Compound list.  
 TOC - Total organic carbon.  
 USACE - U.S. Army Corps of Engineers.  
 VOC - Volatile organic compound.

### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

Potential contamination at Parcel 164(7) is due to its use as Motor Pool Area 800. Vehicle maintenance was, and continues to be, performed here. A washrack, oil/water separator, loading ramp, and aboveground fuel storage facility are present at this site. CERFA parcel descriptions indicate that three USTs were located on the site. These tanks are reported to have been removed. The entire site is paved and bound to the north by a large drainage ditch with water flowing southwest and draining into a concrete drain at the front of the site. A small intermittent stream flows southwest near the southern boundary of the site.

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It is assumed that releases of any potential contaminants from this site are restricted to subsurface soil (leakage from the underground storage tanks) and the environmental media surrounding the paved area (i.e., surface soil water and sediment). Potential contaminant transport pathways include: (1) runoff from the paved surface into the drainage ditch, a small stream located near the southern edge of the site, and soil surrounding the site; (2) infiltration and leaching from subsurface soil to groundwater; (3) discharge of groundwater to the surface; and (4) dust emissions and volatilization from surface water and soil to ambient air.

Current site use is best described as industrial. Plausible receptors under current site use include the groundskeeper, construction worker and recreational site user. Other receptors considered but not included under current site use are:

- The current resident, because the site is not presently used as a residential purposes.
- Venison and fish consumption scenario, because the site is industrialized and does not support hunting or fishing activities.

Tentative plans for this site call for its incorporation into the Rail Industrial Park (FMRRA, 1997). For the future site scenario, plausible receptors include the groundskeeper, construction worker, and recreational site user. A site resident is also added as a conservative measure. The venison and fish consumption scenarios were excluded from the pool of future scenarios for reasons described above.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1 and Table 3-1.

Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) will be addressed in a separate document to be issued as the Habitat-Specific Screening Ecological Risk Assessment Work Plan.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Motor Pool Area 800, Parcel 164(7) site. Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

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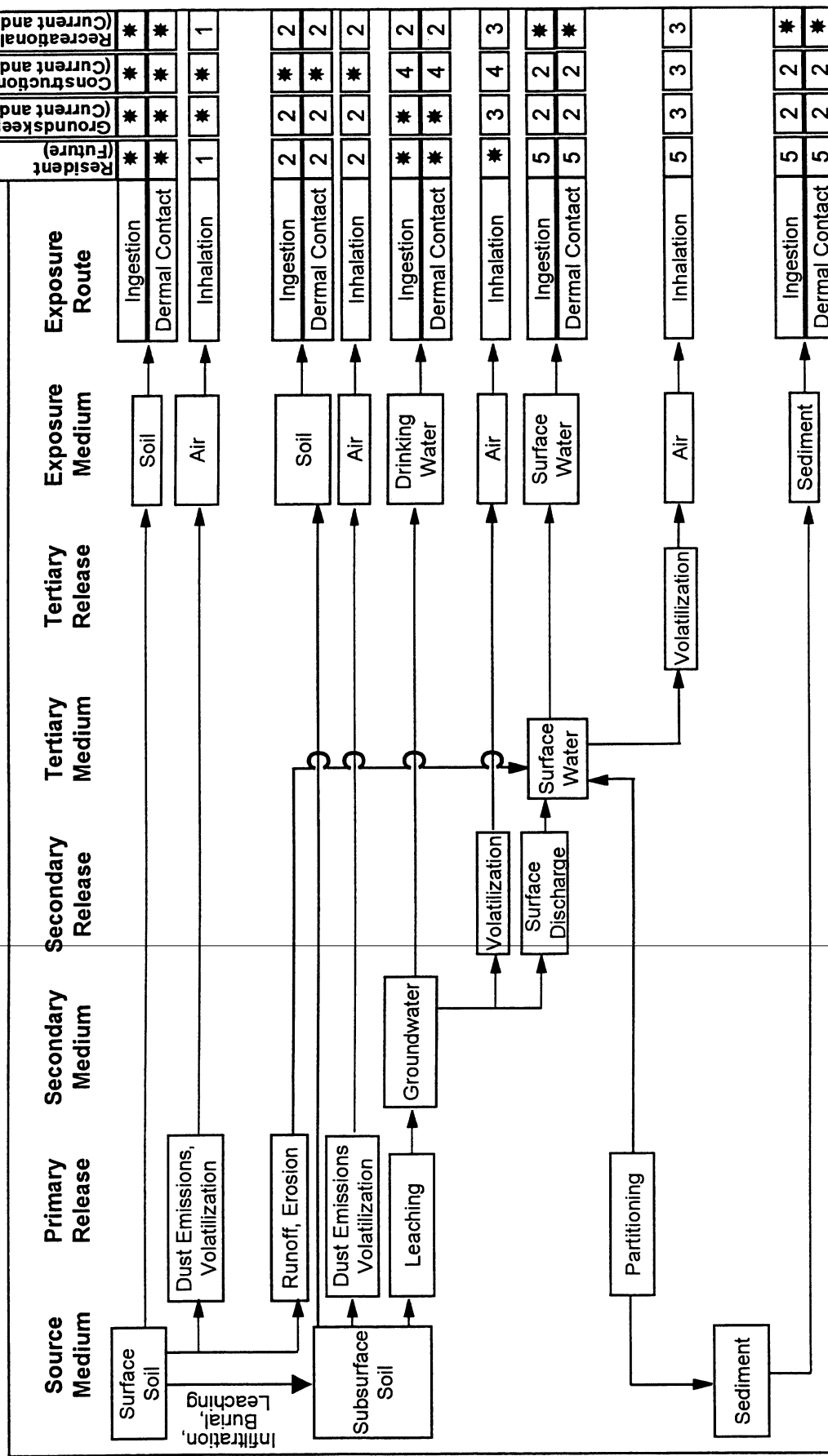
Confirmation of the presence or absence of contamination at the Motor Pool Area 800, Parcel 164(7) site will be based on a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. Definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a feasibility study and risk assessment.

#### ***3.4.2 Data Types and Quality***

Surface and subsurface soil, depositional soil, sediment, surface water and ground water will be sampled and analyzed in order to meet the objectives of the site investigation at the Parcel 164(7) site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as



**Figure 3-7**



\* = Complete exposure pathway quantified in SSSL development.

\* = Complete exposure pathway quantified in SSOL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

3 = Although theoretically complete, this pathway is judged to be insignificant.

4 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

5 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

### ***3.4.3 Precision, Accuracy, and Completeness***

Laboratory requirements of precision, accuracy, and completeness for this site investigation are provided in Section 9.0 of the QAP.

## **4.0 Field Activities**

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### **4.1 Utility Clearances**

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### **4.2 Environmental Sampling**

The environmental sampling during the site investigation at the Motor Pool Area 800, Parcel 164(7), will include the collection of surface and subsurface soil, sediment, depositional soil, surface water and groundwater samples for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media sampled, location descriptions and rationale are shown in Table 4-1.

#### **4.2.1 Surface Soil Sampling**

Surface soil samples will be collected from 15 soil borings at the Former Motor Pool Area 800. Subsurface soil and groundwater samples are planned for two locations downgradient and near the former work bays; therefore, only surface soil will be collected adjacent to both sides of the foundation to determine if PSSC are present in the surface soil.

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##### **4.2.1.1 Sample Locations and Rationale**

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.2.1.2 Sample Collection Procedures**

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample

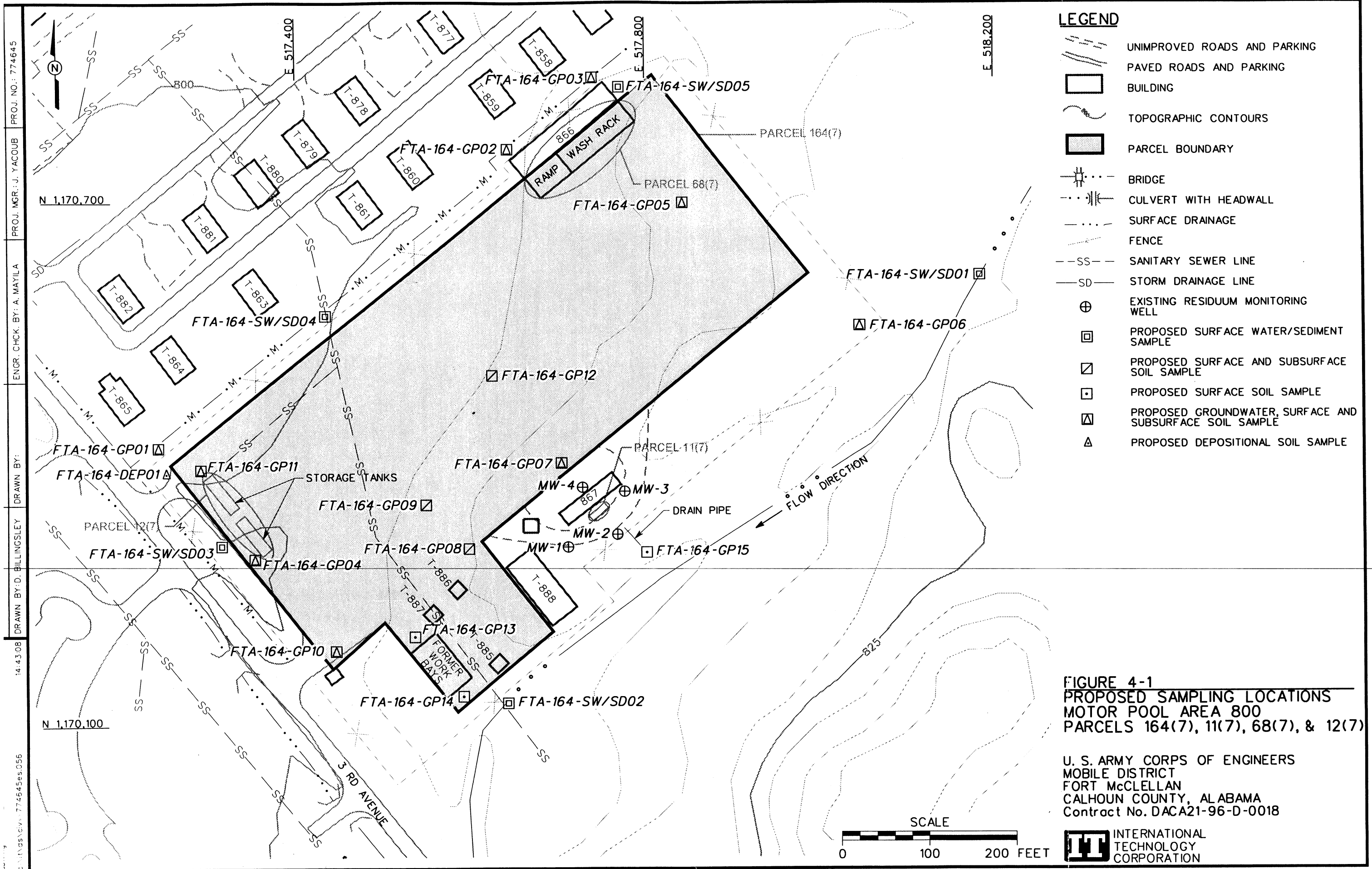


Table 4-1

**Site Sampling Rationale**  
**Motor Pool Area 800, Parcels 164(7), 11(7), 68(7), and 12(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
FTA-164-GP01	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected from the NW corner of the site (downgradient) to determine if potential site-specific chemicals (PSSC) are present.
FTA-164-GP02	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected from the NW corner of the oil/water separator and wash rack to determine if PSSC are beyond site boundary.
FTA-164-GP03	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected from the NE corner of the oil/water separator and wash rack to determine if PSSC are beyond site boundary. Ramp is full of very dark, thick-looking water.
FTA-164-GP04	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected at the east side of the potential tank 12(7) location, to determine if PSSC are present.
FTA-164-GP05	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected south of the wash rack location, upgradient of wash rack and oil/water separator.
FTA-164-GP06	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected upgradient on the SE rear corner of the site near the fence to determine if PSSC are present.
FTA-164-GP07	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected on the north side of the wash rack to determine if PSSC are present.
FTA-164-GP08	Surface Soil, Subsurface Soil	Soil will be collected adjacent to removed UST 11(7) location (south) to determine if PSSC are present.
FTA-164-GP09	Surface Soil, Subsurface Soil	Soil will be collected adjacent to removed UST 11(7) location (north) to determine if PSSC are present.
FTA-164-GP10	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected at the front SW corner of the site near the gate to determine if PSSC are present.
FTA-164-GP11	Surface Soil, Subsurface Soil, Groundwater	Soil and groundwater will be collected adjacent to potential tank 12(7) location (south) to determine if PSSC are present.
FTA-164-GP-12	Surface Soil, Subsurface Soil	Soil will be collected for coverage at the center of the site to determine if PSSC are present.
FTA-164-GP-13	Surface Soil	Soil will be collected adjacent to the concrete pad (north) at front of site to determine if PSSC are present.
FTA-164-GP-14	Surface Soil	Soil will be collected adjacent to the concrete pad (south) at front of site to determine if PSSC are present.
FTA-164-GP-15	Surface Soil	Surface soil will be collected at the mouth of the drainpipe to determine if PSSC are present.
FTA-164-MW-1	Groundwater	Groundwater will be collected near the eastern end of the tank location from the existing monitoring well to determine if PSSC are present.
FTA-164-MW-2	Groundwater	Groundwater will be collected near the south side of the tank location from the existing monitoring well to determine if PSSC are present.
FTA-164-MW-3	Groundwater	Groundwater will be collected near the western end of the tank location from the existing monitoring well to determine if PSSC are present.
FTA-164-MW-4	Groundwater	Groundwater will be collected near the north side of the tank location from the existing monitoring well to determine if PSSC are present.
FTA-164-SW/SD01	Surface Water/Sediment	Surface water and sediment will be collected from the stream upgradient from the SE corner of the site to determine if PSSC are being transported to the site.
FTA-164-SW/SD02	Surface Water/Sediment	Surface water and sediment will be collected from the stream downgradient (SW) near the fence at the front of the site to determine if PSSC are present. This location is a potential downgradient sink for contaminants from the site.
FTA-164-SW/SD03	Surface Water/Sediment	Surface water and sediment will be collected from the drainage at the front of site to capture potential groundwater seep flow discharging from the site.
FTA-164-SW/SD04	Surface Water/Sediment	Surface water and sediment will be collected from the drainage feature north of the site at the center of the boundary to determine if PSSC are present.
FTA-164-SW/SD05	Surface Water/Sediment	Surface water and sediment will be collected from the drainage feature at the NW corner of the oil/water separator outside the fence to determine if PSSC are present.
FTA-164-DEP01	Depositional Soil	Depositional soil will be collected near the fence at the northwest corner of the parcel. The sampling location represents a lower elevation where surface water runoff could collect and potentially percolate into the substratum or deposit dissolved material after evaporation.

Table 4-2

**Surface, Subsurface, and Depositional Soil Sample Designations and QA/QC Sample Quantities**  
**Motor Pool Area 800, Parcels 164(7), 11(7), 68(7), and 12(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			MS/MSD	Analytical Suite
			Field Duplicates	Field Splits			
FTA-164-GP01	FTA-164-GP01-SS-DL0001REG	0-1.0	FTA-164-GP01-SS-DL0002FD			TCL VOCs, SVOCs	
	FTA-164-GP01-DS-DL0003REG	a	FTA-164-GP01-DS-DL0004FD			TAL Metals	
FTA-164-GP02	FTA-164-GP02-SS-DL0005REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP02-DS-DL0006REG	a	FTA-164-GP02-DS-DL0007FD			TAL Metals	
FTA-164-GP03	FTA-164-GP03-SS-DL0008REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP03-DS-DL0009REG	a				TAL Metals	
FTA-164-GP04	FTA-164-GP04-SS-DL0010REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP04-DS-DL0011REG	b				TAL Metals	
FTA-164-GP05	FTA-164-GP05-SS-DL0012REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP05-DS-DL0013REG	a				TAL Metals	
FTA-164-GP06	FTA-164-GP06-SS-DL0014REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP06-DS-DL0015REG	a				TAL Metals	
FTA-164-GP07	FTA-164-GP07-SS-DL0016REG	0-1.0			FTA-164-GP07-DS-DL0017MS	TCL VOCs, SVOCs	
	FTA-164-GP07-DS-DL0017REG	a			FTA-164-GP07-DS-DL0017MSD	TAL Metals	
FTA-164-GP08	FTA-164-GP08-SS-DL0018REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP08-DS-DL0019REG	a				TAL Metals	
FTA-164-GP09	FTA-164-GP09-SS-DL0020REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP09-DS-DL0021REG	a				TAL Metals	
FTA-164-GP10	FTA-164-GP10-SS-DL0022REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP10-DS-DL0023REG	a				TAL Metals	
FTA-164-GP11	FTA-164-GP11-SS-DL0024REG	0-1.0				TCL VOCs, SVOCs	
	FTA-164-GP11-DS-DL0025REG	b				TAL Metals	
FTA-164-GP12	FTA-164-GP12-SS-DL0026REG	0-1.0		FTA-164-GP12-SS-DL0027FS		TCL VOCs, SVOCs	
	FTA-164-GP12-DS-DL0028REG	a		FTA-164-GP12-DS-DL0029FS		TAL Metals	
FTA-164-GP13	FTA-164-GP13-SS-DL0030REG	0-1.0				TCL VOCs, SVOCs	
						TAL Metals	
FTA-164-GP14	FTA-164-GP14-SS-DL0031REG	0-1.0		FTA-164-GP14-SS-DL0032FS		TCL VOCs, SVOCs	
						TAL Metals	
FTA-164-GP15	FTA-164-GP15-SS-DL0033 REG	0-1.0				TCL VOCs, SVOCs	
						TAL Metals	
FTA-164-DEP01	FTA-164-DEP01-DEP-DL0034REG	0-1.0				TCL VOCs, SVOCs, TAL Metals Total TAL Metals	

<sup>a</sup> Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observations.

<sup>b</sup> Depth of sample to be immediately below the estimated bottom of the UST.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.2.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from 12 soil borings at the Former Motor Pool Area 800.

##### **4.2.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the same soil borings as described in Section 4.3.1.1. Subsurface soil samples will be collected from the 12 soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.2.2.2 Sample Collection Procedures**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

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Soil samples will be collected continuously to a depth of 12 feet bgs or until either groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the soil sample intervals collected indicate elevated levels (aboveground) on the PID, the deepest interval collected shall be submitted for laboratory analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC. Site conditions such as lithology may also determine the actual sample depth interval submitted for

Table 4-3

**Groundwater Sample Designations and QA/QC Sample Quantities**  
**Motor Pool Area 800**  
**Parcels 164(7), 11(7), 68(7), and 12(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-164-GP01	FTA-164-GP01-GW-DL3001REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-GP02	FTA-164-GP02-GW-DL3002REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-GP03	FTA-164-GP03-GW-DL3003REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-68-GP04	FTA-164-GP04-GW-DL3004REG	a	FTA-164-GP04-GW-DL3005-FD			TCL VOCs, TCL SVOCs TAL Metals
FTA-68-GP05	FTA-68-GP05-GW-DL3008REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-GP06	FTA-164-GP06-GW-DL3007REG	a			FTA-164-GP06-GW-DL3007MS FTA-164-GP06-GW-DL-3007MSD	TCL VOCs, TCL SVOCs TAL Metals
FTA-164-GP07	FTA-164-GP07-GW-DL3008REG	a		FTA-164-GP07-GW-DL3009-FS		TCL VOCs, TCL SVOCs TAL Metals
FTA-164-GP10	FTA-164-GP10-GW-DL3010REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-12-GP11	FTA-12-GP11-GW-DL3011REG	a				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-MW-1	FTA-164-MW-1-GW-DL3012REG	4-14				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-MW-2	FTA-164-MW-2-GW-DL3013REG	4.5-14.5				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-MW-3	FTA-164-MW-3-GW-DL3014REG	3-13				TCL VOCs, TCL SVOCs TAL Metals
FTA-164-MW-4	FTA-164-MW-4-GW-DL3015REG	4.5-14.5				TCL VOCs, TCL SVOCs TAL Metals

\*Actual sample depth selected for analysis will be at the discretion of the on-site geologist and will be based on sufficient water to collect a sample.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TCL - Target compound list.

VOC - Volatile organic compound.



analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

#### **4.2.3 Existing Monitoring Well Sampling – Groundwater**

Groundwater samples will be collected from existing monitoring wells MW-1, MW-2, MW-3, and MW-4.

Prior to sampling, static water levels will be measured in the existing wells. Water level measurements will be performed as outlined in Section 4.18 of the SAP.

##### **4.2.3.1 Sample Locations and Rationale**

Monitor well locations are shown in Figure 4-1. Sampling rationale is presented in Table 4-1. The groundwater designations and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.2.3.2 Sample Collection Procedures**

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.9.1.1 and 4.9.1.4 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

---

Sample containers, sample volumes, preservatives, and holding times for the required analyses are listed in Section 5.0, Table 5-1 of the QAP.

#### **4.2.4 Direct-Push Groundwater Sampling**

Groundwater samples will be collected from direct-push temporary wells installed at the site. Direct-push temporary wells will be installed in each nine of the soil boring described in Section 4.3.2 to collect groundwater samples.

#### **4.2.4.1 Sample Locations and Rationale**

Nine groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the direct-push temporary wells shown on Figure 4-1. Groundwater sampling rationale is presented in Table 4-1. The groundwater sample designations and required QA/QC sample quantities are listed in Table 4-4. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

#### **4.2.4.2 Sample Collection Procedures**

Groundwater samples will be collected in accordance with the procedures specified in Sections 4.9.1.1 and 4.9.1.4 of the SAP. The direct-push temporary well at each location will be completed at the water table surface (at a depth where sufficient water is encountered) to collect a groundwater sample.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.2.5 Surface Water Sampling**

Five surface water samples will be collected from the small creek near the southern boundary of the site and along the drainage features west and north of the parcel.

##### **4.2.5.1 Sample Locations and Rationale**

The surface water sampling rationale are listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designations and required QA/QC sample quantities are listed in Table 4-4. The exact sampling locations will be determined in the field based on drainage pathways and actual field observations.

##### **4.2.5.2 Sample Collection Procedures**

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

Table 4-4

**Surface Water and Sediment Sample Designations and QA/QC Sample Quantities**  
**Motor Pool Area 800, Parcels 164(7), 11(7), 68(7), and 12(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
FTA-164-SW/SD01	FTA-164-SW/SD01-SW-DL2001REG FTA-164-SW/SD01-SD-DL1001REG	NA 0-0.5				TCL VOCs, TCL SVOCs, TAL Metals Total TAL Metals (for water), TOC, Grain Size (for sediment)
FTA-164-SW/SD02	FTA-164-SW/SD02-SW-DL2002REG FTA-164-SW/SD02-SD-DL1002REG	NA 0-0.5				TCL VOCs, TCL SVOCs, TAL Metals Total TAL Metals (for water), TOC, Grain Size (for sediment)
FTA-164-SW/SD03	FTA-164-SW/SD03-SW-DL2003REG FTA-164-SW/SD03-SD-DL1003REG	NA 0-0.5				TCL VOCs, TCL SVOCs, TAL Metals Total TAL Metals (for water), TOC, Grain Size (for sediment)
FTA-164-SW/SD04	FTA-164-SW/SD04-SW-DL2004REG FTA-164-SW/SD04-SD-DL1004REG	NA 0-0.5				TCL VOCs, TCL SVOCs, TAL Metals Total TAL Metals (for water), TOC, Grain Size (for sediment)
FTA-164-SW/SD05	FTA-164-SW/SD05-SW-DL2005REG FTA-164-SW/SD05-SD-DL1005REG	NA 0-0.5				TCL VOCs, TCL SVOCs, TAL Metals Total TAL Metals (for water), TOC, Grain Size (for sediment)

MS/MSD - Matrix spike/matrix spike duplicate.

NA - Not applicable.

QA/QC - Quality assurance/quality control.

TAL - Target analyte list.

TCL - Target compound list.

TOC - Total organic compound.

VOC - Volatile organic compound.

#### **4.2.6 Sediment Sampling**

Five sediment samples will be collected at the same locations as the five surface water samples presented in Section 4.3.4.

##### **4.2.6.1 Sample Locations and Rationale**

The tentative locations for the five sediment samples to be collected are shown in Figure 4-1. Sediment sampling rationale is presented in Table 4-1. Sediment sample designations and required QA/QC sample quantities are listed in Table 4-4. The actual sediment sample points selected will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

##### **4.2.6.2 Sample Collection Procedures**

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

#### **4.2.7 Depositional Soil Sampling**

One depositional soil sample will be collected in the drainage pathways outside the fence at the northwest corner of the parcel.

##### **4.2.7.1 Sample Locations and Rationale**

The depositional soil sample will be collected in the drainage pathways outside the fence at the northwest corner of the parcel. The sampling rationale is listed in Table 4-1. The proposed sampling location is shown in Figure 4-1. The depositional soil sample designation and required QA/QC sample quantities are listed in Table 4-2. The actual depositional soil sample point selected will be at the discretion of the ecological sampler based on the drainage pathways and on actual field observations.

##### **4.2.7.2 Sample Collection Procedures**

The depositional soil sample will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6, which includes the addition of total organic carbon and grain size analyses.

### **4.3 Decontamination Requirements**

Decontamination will be performed on sampling and non-sampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

### **4.4 Surveying of Sample Locations**

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Horizontal coordinates for soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use direct-push temporary wells to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 feet for horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

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Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

### **4.5 Analytical Program**

Samples collected at the locations specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Motor Pool Area 800 site consist of the following analytical suite:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000 (Total TAL metals for water)

In addition, the sediment sample will be analyzed for the following list of parameters:

- Total Organic Carbon - Method 9060
- Grain Size -American Society for Testing and Materials D-421/D-422.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 of the SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

The Field Sampling Coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

#### ***4.6 Sample Containers, Preservation, Packaging, and Shipping***

Sample containers, preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.1 and 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

---

Sample Receiving  
 Quanterra Environmental Services  
 5815 Middle Brook Pike  
 Knoxville, Tennessee 37921  
 Telephone: (423) 588-6401

USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory  
 Attn: Sample Receiving  
 611 South Cobb Drive  
 Marietta, Georgia 30060-3112  
 Telephone: (770) 919-5270

Table 4-5

**Analytical Samples**  
**Motor Pool Area 800**  
**Parcels 164(7), 11(7), 68(7), and 12(7)**  
**Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples *					Quanterra	QA Lab		
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spits w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)	Total No. Analysis	Total No. Analysis		
Parcel 164(7) Motor Pool Area 800: 13 groundwater, 5 surface water; 15 surface soil, 12 subsurface, 5 sediment, 1 depositional soil															
TCL VOCs	5035/8260B	water	normal	18	1	18	1	1	1	3	1	25	1		
TCL SVOCs	8270C	water	normal	18	1	18	1	1	1		1	22	1		
Tot TAL Metals	6010B/7000	water	normal	18	1	18	1	1	1		1	22	1		
TCL VOCs	5035/8260B	soil	normal	33	1	33	3	1	1		1	39	1		
TCL SVOCs	8270C	soil	normal	33	1	33	3	1	1		1	39	1		
TAL Metals	6010B/7000	soil	normal	33	1	33	3	1	1		1	39	1		
TOC	9060	sediment	normal	5	1	5								5	1
Grain Size	ASTM D-421/D-422	sediment	normal	5	1	5								5	0
												196	7		

\*Equipment rinseate samples will be collected per the task work plan on samples that are collected using nondisposable or nondetected equipment.

Ship samples to:

Quanterra Environmental Services  
 5815 Middlebrook Pike  
 Knoxville, Tennessee 37921  
 Attn: John Reynolds  
 Tel: 423-588-6401  
 Fax: 423-584-4315

USACE Laboratory split samples  
 are shipped to:

USACE South Atlantic Division Laboratory  
 Attn: Sample Receiving  
 611 South Cobb Drive  
 Marietta, Georgia 30060-3112  
 Tel: 770-421-5295

MS/MSD - Matrix spike/matrix spike duplicate.  
 QA/QC - Quality assurance/quality control.  
 SVOC - Semivolatile organic compound.  
 TAL - Target analyte list.  
 USACE - U.S. Army Corps of Engineers.  
 VOC - Volatile organic compound.

#### ***4.7 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Motor Pool Area 800 site will include decontamination fluids and possibly disposable personal protective equipment, and will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

#### ***4.8 Site-Specific Safety and Health***

Health and safety requirements for this site investigation are provided in the SSHP attachment for the Former Motor Pool Area 800 site. The SSHP attachment will be used in conjunction with the installation-wide SHP.



## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

## 6.0 References

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Environmental Science and Engineering Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan Reuse and Redevelopment Authority of Alabama (FMRRA), 1997, ***Fort McClellan Comprehensive Reuse Plan***, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, ***Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama***, August.

IT Corporation (IT), 1998b, ***Final Installation-Wide Work Plan, Fort McClellan, Calhoun County, Alabama***, August.

U.S. Army Corps of Engineers (USACE), 1997, ***Final Archives Search Report Conclusions and Recommendations, Fort McClellan, Anniston, Alabama***, U.S. Department of Defense Base Alignment and Closure Ordnance, Ammunition and Explosives, St. Louis District.

U.S. Army Corps of Engineers (USACE), 1998c, ***Site Investigation, Fort McClellan, Alabama, Scope of Work***, January.

U.S. Department of Agriculture, 1961, ***Soil Survey, Calhoun County, Alabama***, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No.9, September.

**Final  
Site-Specific Field Sampling Plan Attachment  
Site Investigation at the Former Gas Mask Test Chambers,  
Parcels 195(7), 196(7), and 198(7)  
Fort McClellan  
Calhoun County, Alabama**

**Prepared for:**

**U.S. Army Corps of Engineers, Mobile District  
109 St. Joseph Street,  
Mobile, Alabama 36602**

**Prepared by:**

**IT Corporation  
312 Directors Drive  
Knoxville, Tennessee 37923**

---

**Delivery Order CK005  
Contract No. DACA21-96-D-0018  
IT Project No. 774645**

**October 1998**

**Revision 1**

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## ***List of Acronyms***

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ADEM	Alabama Department of Environmental Management
ASR	archives search report
CLP	Contract Laboratory Program
CERFA	Community Environmental Response Facilitation Act
CESAS	Corps of Engineers South Atlantic Savannah
CWA	chemical warfare agent
DOD	U.S. Department of Defense
DQO	data quality objective
EBS	environmental baseline survey
EPA	U.S. Environmental Protection Agency
ESE	Environmental Sciences and Engineering, Inc.
FTMC	Fort McClellan
GPS	global positioning system
IT	IT Corporation
NGVD	National Geodetic Vertical Datum
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	installation-wide sampling and analysis plan
SFSP	site-specific field sampling plan
SHP	safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
USACE	U.S. Army Corps of Engineers
WMP	waste management plan
WP	installation-wide work plan

## ***Executive Summary***

---

In accordance with Contract No. DACA21-96-D-0018, Delivery Order CK005, IT Corporation (IT) will conduct a site investigation at Fort McClellan, Calhoun County, Alabama at the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7) to determine the presence or absence of potential site-specific chemicals. This site-specific field sampling plan (SFSP) will provide technical guidance for sampling activities at the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7). IT will collect four surface soil and four subsurface soil samples at this time.

IT will collect samples for parameters that include volatile organic compounds, semivolatile organic compounds, and metals. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7) will be used in conjunction with the site-specific safety and health plan (SSHP), the habitat specific ecological risk assessment work plan, and the installation-wide WP (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

The Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7), are located on the Main Post, south of Reilly Field. They have been used since the 1950s to instill confidence in trainees that gas masks perform as required, and to confirm proper fit before beginning training elsewhere with live chemical warfare agents (CWA). The three Gas Mask Test Chambers currently in operation are located at Buildings T-401 and T-402 northeast of Trench Hill and at Building 439. A site investigation is being conducted to determine the presence or absence of potential site-specific chemicals (PSSC).



## ***1.0 Project Description***

---

### ***1.1 Introduction***

The U.S. Army is conducting studies of the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7), under Delivery Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling and analysis plan attachment (SFSP) to the installation-wide sampling and analysis plan (SAP) (IT Corporation [IT], 1998a) for Fort McClellan (FTMC), Calhoun County, Alabama, has been prepared to provide technical guidance and rationale for sample collection and analysis at the Former Gas Mask Test Chambers, Parcels 195(7), 196(7) and 198(7). The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Former Gas Mask Test Chambers, Parcels 195(7), 196(7), and 198(7) site, the habitat specific ecological risk assessment work plan, and the installation-wide work plan (WP) (IT, 1998b) and SAP. The SAP includes the installation-wide safety and health plan (SHP), waste management plan, and quality assurance plan (QAP).

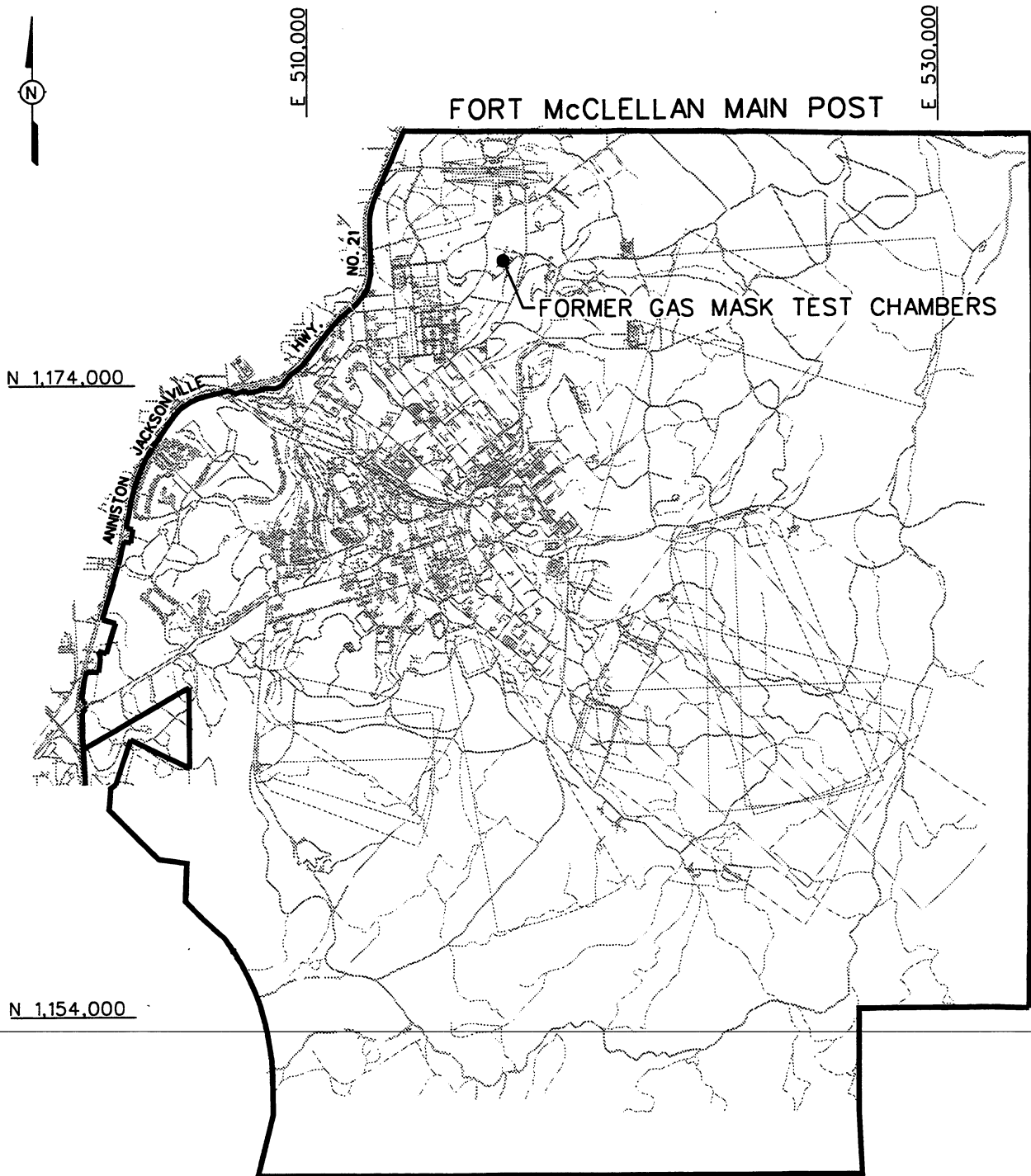
### ***1.2 Site Description***

The Former Gas Mask Test Chambers are located north on the Main Post, south of Reilly Airfield, near 10th Street (Figure 1-1). This site is made up of three parcels: Parcel 195(7), which is northernmost; then 198(7); and farther to the south-southwest, Parcel 196(7) (Figure 1-2). These parcels lie in a wooded area between Trench Hill on the west and Cemetery Hill on the east. A small stream flows northwest across the upper end of the site between Parcels 195(7) and 198(7). The site has an elevation of approximately 770 feet and slopes mainly to the northwest. The building on Parcel 198(7) has been demolished. Building rubble was visible at the site on the April 21, 1998 walkover.

Gas mask test chambers have been used at FTMC since the 1950s to instill confidence in trainees that gas masks perform as required and to confirm proper fit before beginning training elsewhere with live chemical warfare agents (CWA). CS “tear gas” is currently used at the gas mask test chambers; CN “tear gas” and nonpersistent chlorine gas were reportedly used in the past. Live CWA was not used at this site. The agents used at the Gas Mask Test Chambers were made up

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	DRAWN BY: D. BILLINGSLEY	DRAWN BY:	ENGR. CHCK. BY: A. MAYILA	PROJ. MGR.: J. YACOB	PROJ. NO.: 774645

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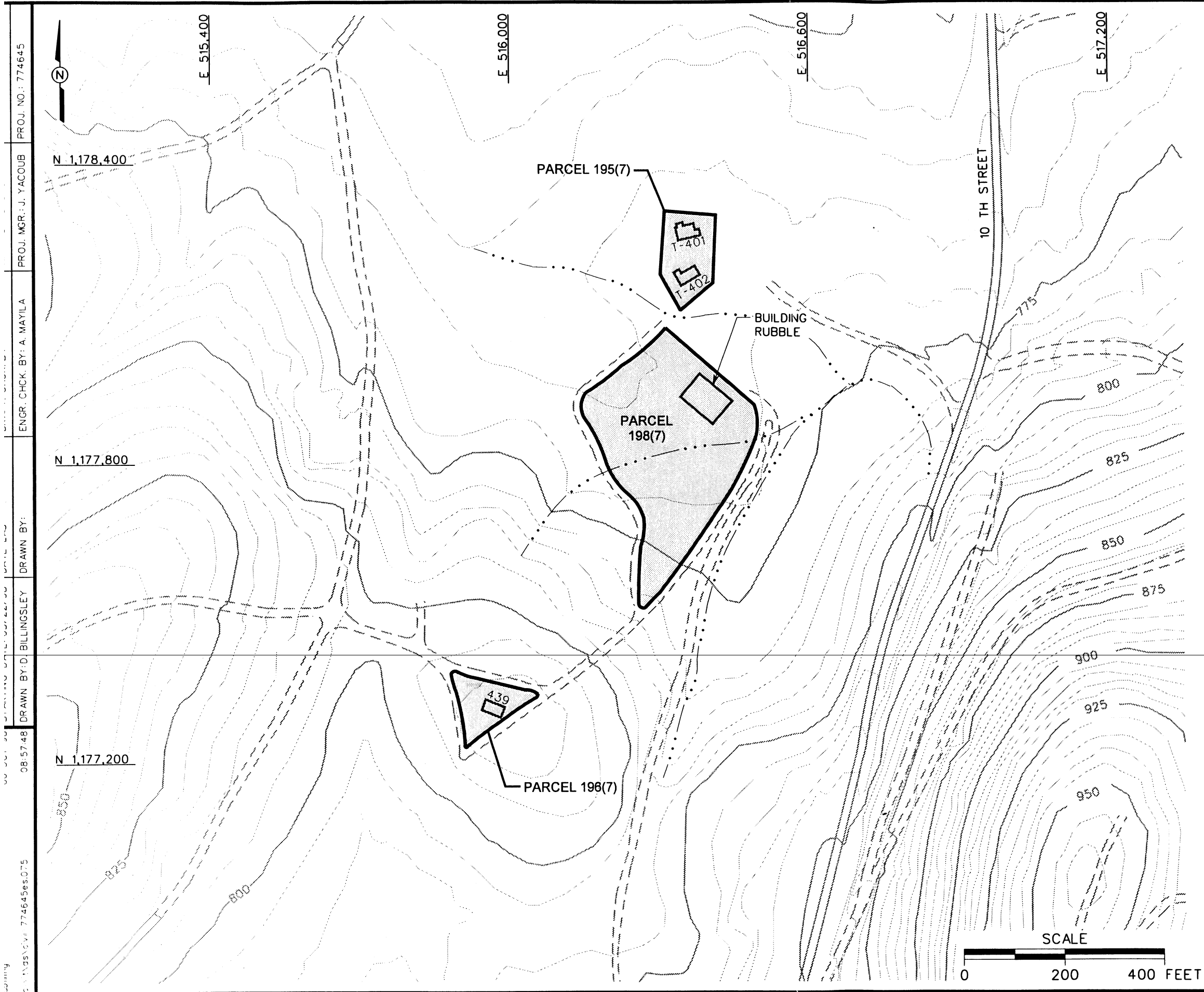
 FORT McCLELLAN BOUNDARY

## **FIGURE 1-1 SITE LOCATION MAP FORMER GAS MASK TEST CHAMBERS PARCELS 195(7), 196(7) & 198(7)**

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018

SCALE  
0 5000 10000 FEET

**IT** INTERNATIONAL  
TECHNOLOGY  
CORPORATION

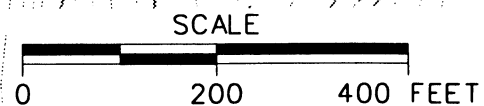


# LEGEND

- UNIMPROVED ROADS AND PARKING
- PAVED ROADS AND PARKING
- BUILDING
- TOPOGRAPHIC CONTOURS
- PARCEL BOUNDARY
- SURFACE DRAINAGE / CREEK

FIGURE 1-2  
SITE MAP  
FORMER GAS MASK TEST CHAMBERS  
PARCELS 195(7), 196(7) & 198(7)

U. S. ARMY CORPS OF ENGINEERS  
MOBILE DISTRICT  
FORT McCLELLAN  
CALHOUN COUNTY, ALABAMA  
Contract No. DACA21-96-D-0018



of chloroacetophenone (cn) and o-chlorobenzylidenemalononitrile (cs). Breakdown products are malononitrile (cs), hydroxyacetophenone (cn), and acetophenone (cn).

Specific procedures for operating the gas mask test chamber were followed: A capsule containing tear agent (cs) would be burned by an instructor in one chamber and trainees would be required to don masks, check for proper fit, enter the chamber, remove masks, and exit upon signal. Cn and chlorine gas would have been used in a similar manner. Small amounts of these irritating agents were used in these gas mask confidence training exercises. Releases have not been reported at any of these current or historical sites. Currently, Parcel 198(7) has unrestricted access. It is unknown what training occurred there. Chemicals used include CS. One active FTMC employee reported that powdered CS was spread on the ground at this location during training exercises. Therefore, it is possible that soil contamination is present. No other information is available (Environmental Science & Engineering, Inc. [ESE], 1998)

Two soil series are present at this location. The northern-most portion of the site, which is cut by the small stream, has the Philo Series. The lower portion of the site has Annistion Series soils. The Philo Series consists of strongly acid, moderately well-drained soils that are developing in local and general alluvium. The parent material washed mainly from sandstone and shale, but some of it came from limestone. Philo soils occur on first bottoms along most streams in the area. The surface soil is very dark grayish -brown to dark brown, fine sandy loam and the subsoil is dark brown, slightly mottled, fine sandy loam. In Calhoun County, the Philo soils are mapped with the Stendal in undifferentiated units.

The specific soil type for this site is Philo and Stendal soils, local alluvium, 0 to 2 percent slopes (PkA). This mapping unit is on foot slopes, along and at the head of small drainageways or draws. It occurs in areas that are 1 to 10 acres in size. The soils are variable in color, texture, and consistency. Drainage ranges from poor to moderately good. Water stands on the surface for short periods, and there are a few seepage areas. Impaired drainage is the main hazard, and these areas are frequently flooded. Depth to water is 1 to 2 feet bls. Depth to top of bedrock is generally greater than six feet bls.

The southern portion of the site is covered with the Annistion Series soils, which consist of strongly acid, deep, well drained soils that have developed in old local alluvium. The parent material washed from the adjacent higher soils. The surface horizon is mainly very dark brown loam, and the subsoil is mainly dark red sandy clay loam. Sandstone and quartzite gravel and cobbles, as much as 8 inches in diameter, are on the surface and throughout the soil. Bedrock

material is limestone or shale. These soils are on foot slopes and on alluvial fans at the base of mountains.

The specific type of Anniston Series soil at this site is Anniston gravelly clay loam, 6 to 10 percent slopes, severely eroded (AbC3). These soils consist of areas that have lost nearly all of their original surface soil through erosion. The upper layer is now a reddish-brown, gravelly clay loam, 4 to 6 inches thick. It is underlain, in most places, by red or dark reddish-brown gravelly clay loam. It has many small, shallow gullies and a few deep ones. Infiltration is moderately slow, and the capacity for available moisture is low. Depth to water is greater than 20 feet. Depth to bedrock is generally between 2 and 10 feet (U.S. Department of Agriculture, 1961).

### ***1.3 Scope of Work***

The scope of work for activities associated with the SI at Parcels 195(7), 196(7) and 198(7), as specified in the statement of work (USACE, 1997a), include the following tasks:

- Develop the SFSP attachment.
- Develop the SSHP attachment.
- Collect four surface and four subsurface soil samples to determine the presence or absence of contamination, if any, at the site and provide data useful in any future planned corrective measures and closure activities.

Upon completion of the field activities and sample analyses, draft and final reports will be prepared that summarize the results of the activities in accordance with current U.S. Environmental Protection Agency (EPA) Region IV, and the Alabama Department of Environmental Management (ADEM) requirements.

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## ***2.0 Summary of Existing Environmental Studies***

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An environmental baseline survey (EBS) was conducted by ESE, (1998) to document current environmental conditions of all FTMC property. The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria:

1. Areas where no storage, release or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action under way.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed of all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels.

The Former Gas Mask Test Chamber site, Parcels 195(7), 196(7) and 198(7), was classified as Category 7: Areas that are not evaluated or that require further evaluation. Previous studies to document site environmental conditions have not been conducted on Parcels 195(7), 196(7) and 198(7).

## **3.0 Site-Specific Data Quality Objectives**

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### **3.1 Overview**

The data quality objective (DQO) process is followed to evaluate data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Former Gas Mask Test Chambers site. This section incorporates the components of the DQO process described in the 1993 EPA publication EPA 540-R-93-071 *Data Quality Objectives for Superfund* (EPA, 1993). The DQO process as applied to the Former Gas Mask Test Chambers site is described in more detail in Sections 3.2 and 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the sampling quantity and procedures necessary to meet the objectives of the SI and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with USACE-Civil Engineering South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

### **3.2 Data Users and Available Data**

The intended data users and available data related to the site investigation at the Former Gas Mask Test Chambers site, presented in Table 3-1, have been used to formulate a site-specific conceptual model. This conceptual model was developed to support the development of this SFSP, which is necessary to meet the objectives of these SI activities and to establish a basis for future action at the site. The data users for information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible information required to confirm or to rule out the existence of residual potential site-specific chemicals (PSSC) in site media.

Table 3-1

**Summary of Data Quality Objectives  
Former Gas Mask Test Chambers  
Parcels 195(7), 196(7) and 198(7)  
Fort McClellan, Calhoun County, Alabama**

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	<u>Contaminant Source</u> Gas Mask Training Activity with CS and CN "tear gas" and non persistent chlorine gas  <u>Migration Pathways</u> Soil  <u>Potential Receptors</u> Groundskeeper (current and future) Construction worker (future) Recreational site user (current and future) Resident (future)  <u>PSSCs*</u> VOCs	SOIL	SI to confirm whether PSSCs are present in the site media.   Definitive quality data for future decision making	<u>Surface soil</u> TCL VOCs TCL SVOCs TAL Metals  <u>Subsurface Soil</u> TCL VOCs TCL SVOCs TAL Metals	Definitive data in CESAS Level B data packages  Definitive data in CESAS Level B data packages	4 direct-push + QC  4 direct-push + QC

ADEM - Alabama Department of environmental Management.  
CESAS - Corps of Engineers South Atlantic Savannah.  
DOD - U.S. Department of Defense.  
EPA - U.S. Environmental Protection Agency.  
PSSC - Potential site-specific chemicals.  
QC - Quality control.  
SI - Site investigation.

SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
TCL - Target Compound list.  
TOC - Total organic carbon.  
USACE - U.S. Army Corps of Engineers.  
VOC - Volatile organic compound.

\*Note: Metals are not included as a PSSC, but will be sampled and analyzed as a conservative measure.



### **3.3 Conceptual Site Exposure Model**

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health in the risk assessment. The CSEM includes the receptors appropriate to all plausible scenarios, and the potential exposure pathways. Graphically presenting possible pathways by which a potential receptor may be exposed, including sources, release and transport pathways, and exposure routes, facilitates consistent and comprehensive evaluation of risk to human health, and helps to ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptors
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not relevant for direct receptor contact with a contaminated source medium.

The Former Gas Mask Test Chambers site consists of three parcels, each with a building used to test gas masks using various tear gas agents. Potential contaminants apparently are limited to tear gas agents. Primary contaminant release was probably to surface soil. Contamination, however, is expected to have been very light. Also, the agents released would have rapidly volatilized and been disposed by ambient air. The potential for contaminant migration or transport to other media is very low; therefore, media other than soil are not considered.

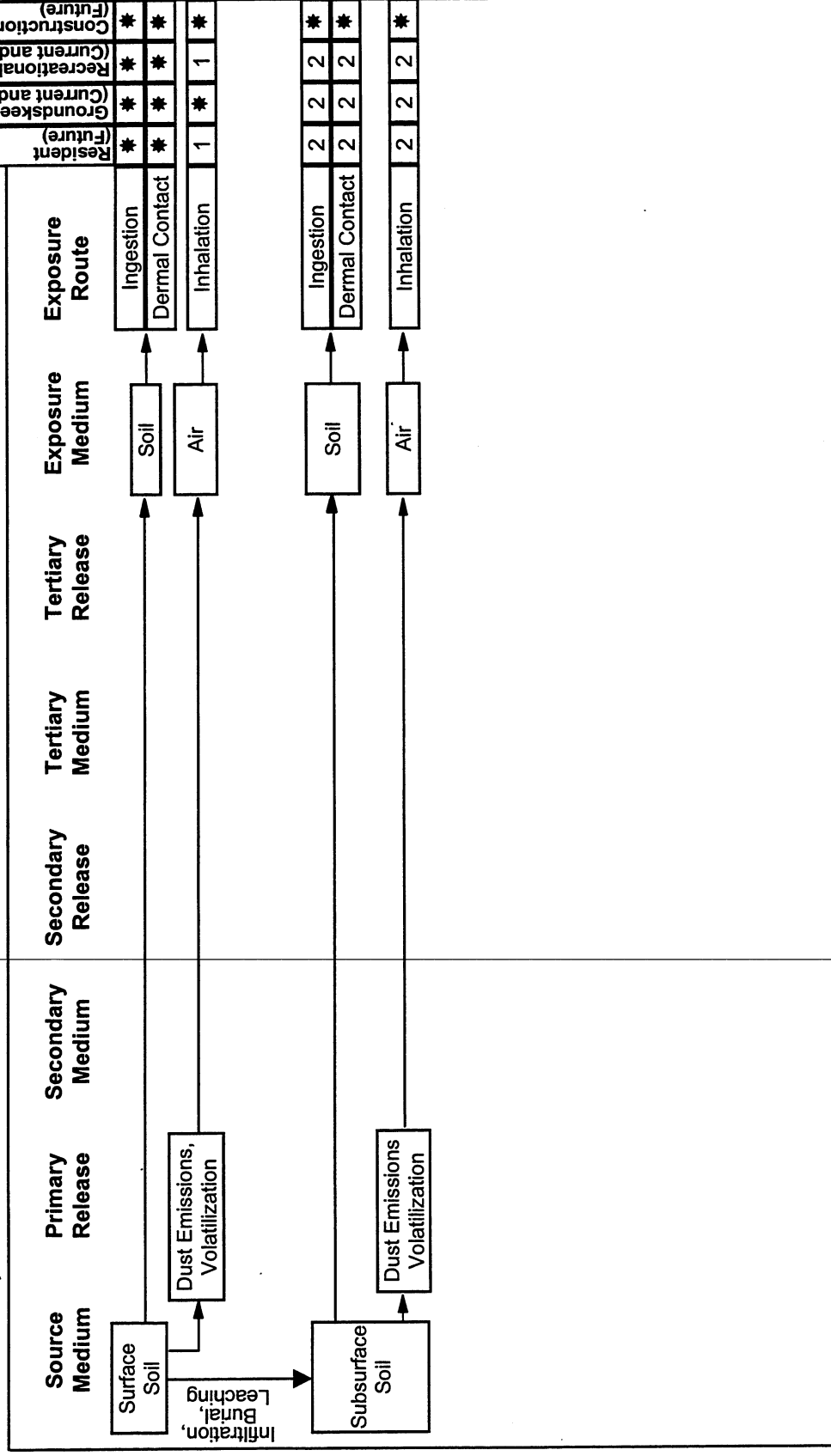
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Plausible receptors under the current site-use scenario include a groundskeeper and construction worker, and a recreational site user exposed to soil. Future plans call for inclusion of the site in the McClellan Industrial Park, used for light industrial or warehousing, or developed for use as a research facility (FTMC, 1997). Development for residential use is also possible and would represent a more conservative future-use scenario. Plausible receptors under the future site-use scenario include a groundskeeper, construction worker, recreational site user, and resident exposed to soil.

The contaminant release and transport mechanisms, source and exposure media, receptors and exposure pathways are summarized in Figure 3-1.

**Figure 3-1**

**Human Health Conceptual Site Exposure Model for Gas Mask Test Chambers  
Parcels 195(7), 196(7), and 198(7)  
Ft. McClellan, Alabama**



\* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = Incomplete exposure pathway.

### ***3.4 Decision-Making Process, Data Uses, and Needs***

The decision-making process consists of a seven-step process that is presented in detail in Sections 3.2 and 4.3 of the WP and will be followed during the site investigation at the Former Gas Mask Test Chamber site. Data uses and needs are summarized in Table 3-1.

#### ***3.4.1 Risk Evaluation***

Confirmation of the presence or absence of contamination at the Former Gas Mask Test Chambers site will be based upon a comparison of detected site contaminants to site-specific screening levels developed in the WP. EPA definitive data with CESAS Level B data packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria limits are exceeded in site media. This definitive data will confirm the presence or absence of site contamination areas and will support additional decision making steps, such as remedial action and risk assessment, if necessary.

#### ***3.4.2 Data Types and Quality***

Surface and subsurface soil will be sampled and analyzed in order to meet the objectives of the site investigation at the Former Gas Test Chambers site. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

#### ***3.4.3 Precision, Accuracy, and Completeness***

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Laboratory requirements of precision, accuracy, and completeness for the SI investigation are provided in Section 9.0 of the QAP.

## ***4.0 Field Activities***

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The parcels of property being investigated under this SI were identified during the EBS (ESE, 1998) and listed as a Category 7 site. Category 7 indicates the sites that have not been evaluated or need additional investigation.

### ***4.1 Utility Clearances***

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

### ***4.2 Geophysical Survey***

A geophysical survey is not planned for this site because tanks or other underground structures are not believed to be at the site.

### ***4.3 Environmental Sampling***

The environmental sampling performed during the site investigation at the Former Gas Mask Test Chambers site will include the collection of surface and subsurface soil for chemical analysis. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. The sample locations, media sampled, location descriptions and rationale are shown in Table 4-1.

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#### ***4.3.1 Surface Soil Sampling***

Surface soil samples will be collected from four soil borings at the Former Gas Mask Test Chambers.

##### ***4.3.1.1 Sample Locations and Rationale***

Surface soil sampling rationale is presented in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

**Table 4-1**

**Site Sampling Rationale  
Former Gas Mask Test Chambers  
Parcels 195(7), 196(7) and 198(7)  
Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Media	Sampling Location Rationale
FTA-195-GP01	Surface Soil Subsurface Soil	Soil will be collected near the door of Building T-401 to determine if potential site-specific chemicals (PSSC) are present.
FTA-195-GP02	Surface Soil Subsurface Soil	Soil will be collected near the door of Building T-402 to determine if PSSC are present.
FTA-195-GP03	Surface Soil Subsurface Soil	Soil will be collected near the door location of the former building on Parcel 198(7) to determine if PSSC are present.
FTA-195-GP04	Surface Soil Subsurface Soil	Soil samples will be collected near the door of Building 439 to determine if PSSC are present.

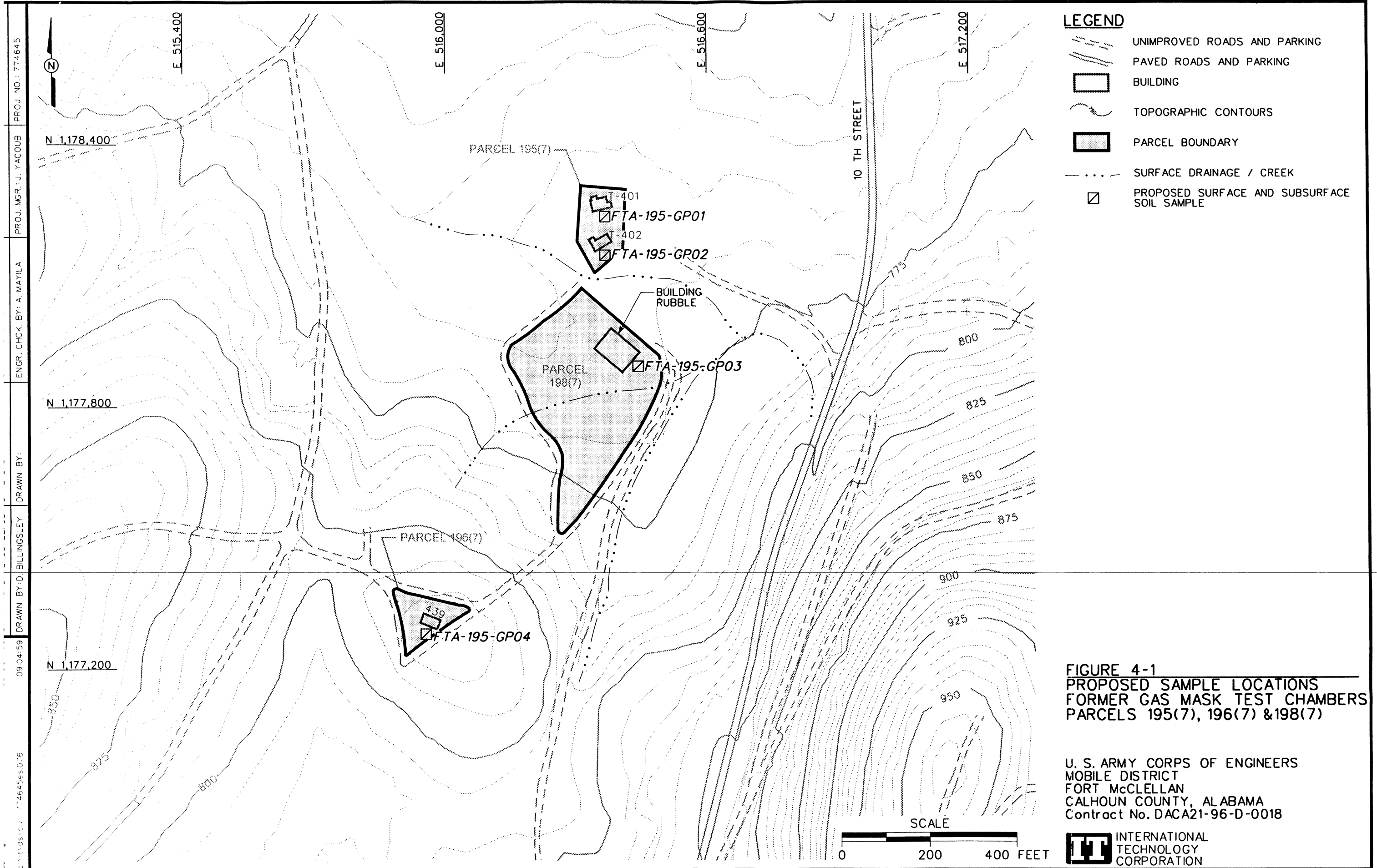


Table 4-2

**Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities**  
**Former Gas Mask Test Chambers**  
**Parcels 195(7), 196(7) and 198(7)**  
**Fort McClellan, Calhoun County, Alabama**

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicate	Field Splits	MS/MSD	
FTA-195-GP01	FTA-195-GP01-SS-DT0001-REG	0-1.0			FTA-195-GP01-SS-DT0001-MS FTA-195-GP01-SS-DT0001-MSD	TCL VOCs, TCL SVOCs, TAL Metals
	FTA-195-GP01-DS-DT0002-REG	a		FTA-195-GP01-SS-DT0004-FS		TCL VOCs, TCL SVOCs, TAL Metals
FTA-195-GP02	FTA-195-GP02-SS-DT0005-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-195-GP02-DS-DT0006-REG	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-195-GP03	FTA-195-GP03-SS-DT0007-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-195-GP03-DS-DT0008-REG	a				TCL VOCs, TCL SVOCs, TAL Metals
FTA-195-GP04	FTA-195-GP04-SS-DT0009-REG	0-1.0				TCL VOCs, TCL SVOCs, TAL Metals
	FTA-195-GP04-DS-DT0010-REG	a				TCL VOCs, TCL SVOCs, TAL Metals

\*Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observations.

MS/MSD - Matrix spike/matrix spike duplicate.

QA/QC - Quality assurance/quality control.

SVOC - Semivolatile organic compound.

TAL - Target analyte list.

TCL - Target compound list.

VOC - Volatile organic compound.

#### **4.3.1.2 Sample Collection Procedures**

Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology using the methodology specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP. Collected soil samples will be screened using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

#### **4.3.2 Subsurface Soil Sampling**

Subsurface soil samples will be collected from four soil borings at the Former Gas Mask Test Chambers.

##### **4.3.2.1 Sample Locations and Rationale**

Subsurface soil samples will be collected from the same soil borings as described in Section 4.3.1.1. Subsurface soil samples will be collected from the 4 soil borings shown on Figure 4-1. Subsurface sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field conditions.

##### **4.3.2.2 Sample Collection Procedures**

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot below the ground surface in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Sections 4.7.1.1 and 4.9.1.1 of the SAP.

Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Soil samples will be collected continuously for the first 10 feet and every 5 feet thereafter until groundwater or refusal is reached. A detailed lithological log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected



for analyses. Collected subsurface soil samples will be field screened using a PID in accordance with Section 4.13 of the SAP to measure samples exhibiting elevated readings above background. Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSC. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight for determining the existence of any PSSC. Any additional subsurface samples will be collected at the discretion of the on-site geologist based on field observations.

#### ***4.4 Decontamination Requirements***

Decontamination will be performed on sampling and nonsampling equipment primarily to ensure that contaminants are not introduced into samples from location to location. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of nonsampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

#### ***4.5 Surveying of Sample Locations***

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate system, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

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Horizontal coordinates for all soil, sediment, and surface water locations will be recorded using a GPS to provide accuracy within 1 meter. Because of the need to use temporary wells (micro-wells) to determine water levels, a higher level of accuracy is required. Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitoring well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

#### **4.6 Analytical Program**

Samples collected at the location specified in this chapter of this SFSP will be analyzed for the specific suites of chemicals and elements based on the history of site usage, as well as EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected from the Former Gas Mask Test Chambers site consist of the following analytical suite:

- Target Compound List Volatile Organic Compounds - Method 5035/8260B
- Target Compound List Semivolatile Organic Compounds - Method 8270C
- Target Analyte List Metals - Method 6010B/7000.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-3 of the SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported by the laboratory via hard copy data packages using CLP-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

The Field Sampling Coordinator will provide the required sample bottles and sampling equipment on a daily basis during the sampling process at each site. Table 5-1 in the QAP will be used as the guide for the required bottles.

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#### **4.7 Sample Preservation, Packaging, and Shipping**

Sample preservation, packaging, and shipping will follow the procedures as specified in Section 4.13.1 and 4.13.2 of the SAP. Completed analysis request/chain of custody records will be secured and included with each shipment of coolers to:

Sample Receiving  
Quanterra Environmental Services  
5815 Middle Brook Pike  
Knoxville, Tennessee 37921  
Telephone: (423) 588-6401

Table 4-3

**Analytical Samples  
Former Gas Mask Test Chambers  
Parcels 195(7), 196(7) and 198(7)  
Fort McClellan, Calhoun County, Alabama**

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples			QA/QC Samples*					Quanterra Total No. Analysis	QA Lab Total No. Analysis
				No. of Sample Points	No. of Events	No. of Field Samples	Field Dups (10%)	Spills w/ QA Lab (5%)	MS/MSD (5%)	Trip Blank (1/ship)	Eq. Rinse (1/wk/matrix)		
Parcels 195(7), 196(7) and 198(7) Former Gas Mask Test Chambers: 4 surface soil and 4 subsurface soil													
TCL VOCs	8260B	soil	normal	8	1	8	1	1	1	1	1	12	1
TCL SVOCs	8270C	soil	normal	8	1	8	1	1	1	1	1	12	1
TAL Metals	6010B/7000	soil	normal	8	1	8	1	1	1	1	1	12	1
Former Gas Mask Test Chamber Subtotal						24						36	3

\*Equipment rinseate samples will be collected per the task work plan on samples that are collected using nondisposable or nondetected equipment.

## Ship samples to:

Quanterra Environmental Services  
5815 Middlebrook Pike  
Knoxville, Tennessee 37921  
Attn: John Reynolds  
Tel: 423-588-6401  
Fax: 423-584-4315

USACE Laboratory split samples  
are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Tel: 770-421-5295

MS/MSD - Matrix spike/matrix spike duplicate.  
QA/QC - Quality assurance/quality control.  
SVOC - Semivolatile organic compound.  
TAL - Target analyte list.  
USACE - U.S. Army Corps of Engineers.  
VOC - Volatile organic compound.

USACE laboratory split samples are shipped to:

USACE South Atlantic Division Laboratory  
Attn: Sample Receiving  
611 South Cobb Drive  
Marietta, Georgia 30060-3112  
Telephone: (770) 919-5270

#### ***4.8 Investigation-Derived Waste Management***

Management and disposal of the investigation-derived wastes will follow procedures and requirements as described in Section 4.11 and Appendix D of the SAP. The IDW expected to be generated at the Former Gas Mask Test Chambers site will include decontamination fluids and possibly disposable personal protective equipment, and will be stored inside the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

#### ***4.9 Site-Specific Safety and Health***

Health and safety requirements for this site investigation are provided in the SSHP attachment for the Former Gas Mask Test Chambers site. The SSHP attachment will be used in conjunction with the installation-wide SHP.

## ***5.0 Project Schedule***

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The project schedule for the SI activities will be provided by the IT project manager to the Base Closure Team on a monthly basis.

## 6.0 References

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Environmental Science & Engineering Inc. (ESE), 1998, *Final Environmental Baseline Survey, Fort McClellan, Alabama*, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, *Fort McClellan Comprehensive Reuse Plan*, Fort McClellan Reuse and Redevelopment Authority of Alabama, prepared under contract to the Calhoun County Commission, November.

IT Corporation (IT), 1998a, *Final Installation-Wide Sampling and Analysis Plan, Fort McClellan, Calhoun County, Alabama*, August.

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U.S. Army Corps of Engineers (USACE), 1994, *Requirements for the Preparation of Sampling and Analysis Plan*, Engineer Manual EM 200-1-3, September 1.

U.S. Department of Agriculture, 1961, *Soil Survey, Calhoun County, Alabama*, USDA Soil Conservation Service in cooperation with Alabama Department of Agriculture and Industries, Alabama Agricultural Experiment Station, Series 1958, No.9, September.

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